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ORIGINAL ARTICLES.

THE PRINCIPLES OF IMMUNITY AND CURE IN THE INFECTIOUS DISEASES.¹

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GENTLEMEN OF THE SECTION ON GENERAL MEDICINE OF THE FIRST PAN-AMERICAN MEDICAL CONGRESS: I wish to extend to you a hearty greeting, and to thank you for your presence and for the interesting and valuable papers which many of you have prepared and which will make the work of this Section worthy of the profession of the New World.

In opening the labors of this Section, I have decided to bring before you for your consideration a theory concerning the principles of immunity and cure in the infectious diseases. I shall at first discuss the question of immunity and shall then endeavor to ascertain the differences, if there be any, between the fundamental principles upon which immunity is secured and those by which cure may be brought about.

Upon the subject of immunity many valuable contributions have been made, and theory after theory has been proposed. Both the researches and the theories have their value, that of the former being permanent and that of the latter consisting principally in suggestions that stimulate and systematize investigation. The value of a theory does not wholly depend upon its truth, but is rather to be measured by the fruitfulness of the lines of investigation that it opens. Indeed, a theory may be wholly erroneous and yet it may lead to most important discoveries.

It is not my purpose to assail or even to discuss the theories concerning immunity that have heretofore been brought forward, but to suggest one that, in my opinion, will harmonize the results already attained by scientific workers and which, I hope, will lead to other investigations.

Immunity may be natural or acquired. Natural immunity may be peculiar to the species or race, or to the individual. An example of natural immunity is that of the domestic fowl to anthrax. As has been shown by Lazarus and Weyl, the chick, even at the

time of coming from the shell, is immune to the most virulent culture of the bacillus anthracis. It is true that this animal may be made susceptible to anthrax, but this is an artificially-induced susceptibility. The immunity is natural to this bird at every period of its life. Another example of racial immunity is that of the frog to anthrax. This animal can also be rendered susceptible, but again it is true that the susceptibility is artificial and the immunity is natural. Racial immunity must be inherent in the parent cell.

The natural immunity, which is peculiar to the individual, usually comes with adult life. The young are susceptible to a given disease, but adults of the same species lose this susceptibility and become immune. The young rat is susceptible to anthrax, while the adult is naturally immune, but can be rendered susceptible by exhaustive exercise. The child is highly susceptible to scarlet-fever and diphtheria; while the adult, though not wholly immune to these diseases, loses very much in susceptibility and is likely to become infected only when greatly reduced in vitality or after prolonged and aggravated exposure to the poison. The only reasonable explanation of this immunity is that it is inherent in the parent cell and comes on as naturally as do the changes in form and voice at puberty or the growth of the beard in early manhood. The evolution of the condition of immunity in these cases is due to the natural development of the functional activity of certain cells of the body. The cause of the difference in the effect of the anthrax-bacillus on the young rat and that of the same germ on the adult rat exists in the rat and not in the bacillus. A child and an adult are exposed to the Löffler bacillus from the same source; the former becomes infected, the latter does not. The germ is the same, but in the development that converts the child into the adult, the resistance with which the germ must contend has been strengthened. The immunity that comes with adult life must be due to altered cell-activity.

Ehrlich has shown that immunity from poisoning with the vegetable proteids, abrin, ricin, and robin, is transmitted from the mother to the fetus and retained by the latter for more than a month after birth, when it is quickly lost, and that the second generation fails to show any immunity. He concludes that there are two kinds of immunity: one he designates as active, the other as passive. The

¹ The President's Address, read before the Section on General Medicine of the Pan-American Medical Congress, held at Washington, D. C., September 5, 6, 7, 8, 1893.

immunity that he found to be transmitted, as already stated, from mother to child he classifies as passive, and thinks that it is due to the transmission of ready-formed antitoxins from the mother to the child and that these antitoxins being soon eliminated the immunity is lost. In active immunity he supposes that the body has acquired the property of manufacturing the antitoxins, but upon this point he is not clear. He also demonstrates that immunity may be transmitted from the nurse to the child, even when the latter is not the offspring of the former and has come from a highly susceptible mother.

This division of immunity into an active and a passive form is convenient and plausible, but Ehrlich's active immunity must be cellular in origin. Can any chemical products be elaborated in the animal body except by the activity, either direct or indirect, of cells? The most earnest opponent of vital energy—which now means cellular activity—admits that the active principles of the digestive juices are the products of specialized glands, and even the absorption of the products of digestion, which we once believed to be effected in accordance with the comparatively simple laws of osmosis, is now known to be dependent upon cellular activity. But can it be said that the temporary immunity that is transmitted from mother to child or from nurse to nursing is of cellular origin? The mother and the fetus are physiologically one, and the same is true of the nurse and the nursing. The blood of the mother flows through the fetus, and the products of the cells of the nurse feed the nursing.

Ehrlich made six experiments, in which it was found that the offspring of an immune father and a susceptible mother did not possess even a temporary immunity, and this forms another reason for his belief that immunity is humoral; but Tizzoni and Cattani have shown that an immunity to tetanus artificially induced in the sire is transmitted, though lessened in degree, to his offspring, although the mother remains susceptible; and Tizzoni and Centanni, that a like immunity to rabies may be transmitted from father to offspring. If these statements be true, the humoral theory of immunity must be modified so that the non-cellular elements can be considered as inducing immunity only by their effects upon the cellular elements. As is claimed by Ehrlich, immunity transmitted from the mother to the offspring may be explained by supposing the introduction into the latter from the former, through the fetal circulation or through the milk, of immunity-conferring substances in soluble form; but in the transmission from father to children, we can conceive only of the idea that the immunity must reside in the cellular elements of the spermatogenic fluid, because our knowledge of fecundation teaches us

that the head of the spermatozoon fuses with the ovum and produces the child.

Artificial immunity may be induced by either of the following methods:

1. By an attack of the disease, ending in recovery. Until the discovery of Jenner, this was the only known cause of immunity, and even at present it is supposed to be, as far as man is concerned, the most potent cause. However, we now know that the period of time through which immunity thus obtained holds good has been overestimated. A man may have smallpox the second time, provided several years have elapsed since the first attack, and provided the second exposure brings him in contact with a highly virulent form of the infection, or the exposure continues through an unusually long period or happens at a time when the health is much reduced from any cause. Moreover, the period of immunity conferred by an attack of some of the infectious diseases is so short that many have reasonably questioned its existence.

It is true, I believe, that the more grave and virulent the disease may be, the greater and more persistent is the immunity that follows. I mention this in order to call attention to the fact that there is a quantitative relation between cause and effect in the production of immunity. Please bear in mind that in this method of inducing immunity the substance of the germ itself is introduced into the body. This method found a practical application in inoculation for the prevention of smallpox.

2. By vaccination with a modified and less virulent form of the infection, or by the introduction of at first a very small number of the virulent germs and successive inoculations with larger numbers.

The successful inoculations against chicken-cholera and anthrax made by Pasteur consist in vaccination with a modified germ, and the valuable investigations of Emmerich and his students in immunizing certain animals to swine-erysipelas have demonstrated the results that may be obtained by employing the virulent germ first in small numbers and then gradually increasing the dose. Again, it may be observed that the germs themselves are introduced into the body, and again it is also true that the more potent the cause the greater and more persistent the effect. The immunity that follows inoculation with a germ of full virulence is more marked and extends through a longer period than that which is induced by a vaccine.

3. By one or more treatments with sterilized cultures of the germs.

Immunity against the germs of typhoid fever, cholera, diphtheria, tetanus, hog-cholera, and several other diseases, has been secured by one or more treatments with sterilized cultures of these

germs. An interesting question arises in this connection: What constituent of the sterilized culture is it that confers immunity? All will agree that it is not due to the ptomaines that are present in some of the cultures. Another important class of substances present in these sterilized cultures contains the so-called toxalbumins, and to these we may possibly look for the cause of the immunity.

The teaching of some of the German investigators is that each pathogenic germ produces both toxins and a special immunizing substance. This is a very convenient theory. It supposes that each germ, while elaborating its harmful products, also produces a substance that will prevent its growth. Please bear in mind that this theory is wholly different from that which teaches that the germ may be finally killed by its own products. We know that many living things, both vegetable and animal, are killed by their own excretions, when the latter are allowed to accumulate about the former, but the theory of the production of a special immunizing substance by each specific germ is wholly different from this. The theory teaches that the germ produces a substance that confers immunity against itself and that the object in the production of this body is to confer the immunity. If we should find in *nuxvomica* a substance that would render animals insusceptible to the action of strychnin, this fact would be analogous to the theory of the formation by each germ of a specific immunizing agent. This theory certainly presupposes a foresight and kindness on the part of the deadly germs of diphtheria and other infectious diseases which we hardly expected to find.

Fraenkel states that the toxic and the immunizing substances produced by the diphtheria-germs are two distinct bodies, the former being destroyed by a temperature of from 55° to 60° C., while the latter will bear a temperature of 70° C. or higher. He recommends that the cultures, sterilized by filtration through porcelain, be heated to from 66° to 70° C. and then be used in the production of immunity. However, he admits the possibility that the toxic substance may be converted into the immunizing body by the effect of the heat in lessening the virulence of the former, and there are many reasons for believing that this is the true explanation.

Brieger and Wassermann produced in guinea-pigs a certain degree of immunity from cholera by previous treatment with bouillon-cultures of the germ heated to from 65° to 80° C. Shall we conclude from this that the cholera-germ elaborates a special immunizing substance? Wassermann has shown that the immunizing substance in sterilized cultures of the comma-bacillus is contained in the germs themselves and is identical with the specific proteid

poison of this germ. In other words, the substance that in larger doses kills, in smaller doses gives to the animal immunity from the living germ.

I think that we can answer the question as to which constituent of sterilized cultures gives immunity with considerable confidence if we recognize the following facts:

1. Marked artificial immunity to an infectious disease has not been obtained except by the introduction into the animal of the germ-substance, either enclosed in the cell-wall or in solution.

2. Sterilized cultures contain the germ-substance in one or both of these forms.

3. The same immunizing substance exists in the bodies of bacteria grown on solid media and killed by the action of chloroform.

4. The same immunizing effects, varying, however, in degree, are obtained with the bodies of dead bacteria morphologically intact or in solution, with living bacteria modified and reduced in virulence, and with very small numbers of the virulent germ.

With these demonstrated facts before us, I am ready to believe that the immunizing substance is a constituent of the bacterial cell itself; and as each kind of germ has its own peculiar poison (which in small doses confers immunity), this poison cannot come from the cell-wall; nor is it really a split product of the germ's action, but it is the essential characteristic part of the cell—that part which gives to the germ its distinctive properties. I believe that it is the nuclein.

The three methods of inducing immunity, which we have mentioned, reduce themselves to one and the same principle, *i. e.*, the introduction of germ-nuclein into the body.

The immunity that results from an attack of the disease is caused by the introduction of germs, living and more or less virulent; that which comes from vaccination is due to the introduction of germs, living but modified and reduced in virulence or administered in small quantity; that which is secured by one or more treatments with sterilized cultures is secured by the introduction of germ-nuclein so modified that it is no longer capable of reproducing itself.

Understood in this way, the production of immunity from disease becomes analogous to that which Sewall obtained with the venom of the rattlesnake, and Ehrlich with ricin and abrin.¹ Indeed, the venom of snakes, the poisonous vegetable proteids, abrin, ricin, and robin, and the cellular proteids of the pathogenic germs, have many characteristics in common. All are proteids, intensely

¹ Ehrlich tells us that one gram of ricin would be sufficient to kill one and one-half million guinea-pigs. The poison of tetanus can scarcely be more virulent.

poisonous; they lose their poisonous properties on being boiled in aqueous solution; different species of animals vary in their susceptibility to these poisons; they are much less poisonous when given by the stomach than when injected hypodermatically (the difference in the amounts necessary to produce fatal effects when administered by these different avenues being much greater than with either the vegetable or the putrefactive alkaloids). The immunity which is secured by all of these substances is gradually lost. A further resemblance between the vegetable and the bacterial poisonous proteids is to be found in the fact that immunity to one of these substances obtained from a given source does not confer immunity to another from a different source. An animal rendered immune to ricin is still susceptible to abrin, and one rendered immune to tetanus remains susceptible to diphtheria. Whether or not an animal made immune to the venom of one species of poisonous snake would still be susceptible to the venom of another species is not, so far as I have any knowledge, known.

The immunity obtained by Brieger, Kitasato, and Wassermann by inoculating with cultures grown in thymus-bouillon is due to the same principle that governs in the methods already discussed. Immunity was secured by the introduction of a modified bacterial proteid, the lessened virulence of the poison being due to a certain constituent of the thymus-extract. The nature of this constituent of the thymus gland will be discussed later. That the tetanus-germ is physiologically modified by its growth in the thymus-bouillon was demonstrated by the fact that it failed to produce spores in this medium, as well as by its diminished virulence.

Behring rendered about 40 per cent. of the animals experimented upon immune to tetanus and diphtheria by previous treatments with small amounts of cultures to which iodine trichlorid had been added. This is also most probably due to the fact that the chemical compound modified the bacterial proteid. Behring himself gives this explanation. He also states that it is a matter of indifference whether he employed cultures containing bacteria or those that are germ-free. By the latter he means cultures in which the germs have been deprived of their vitality or from which they have been removed by filtration. In either case the cell-proteid of the germ is present either in the form of cells or in solution, and this cellular proteid is the agent that induces immunity.

5. By treating a susceptible animal with the blood-serum of an immune animal.

Strange as it may seem, the principle upon which immunity is secured when the blood-serum of an immunized animal is injected into a susceptible one is essentially the same as that which holds good in

the methods already discussed. A horse is rendered immune to tetanus by previous treatment with the modified bacterial proteid of that disease. As a result of these treatments a tetanus-antitoxin is generated in some organ or organs of the horse and circulates in its blood. When the blood clots this antitoxin is found in the serum, and if the serum be injected into a mouse in sufficient quantity, this animal becomes for the time being immune to the tetanus-poison, provided that the poison is not introduced in quantities so large that it will not be destroyed by the antitoxin that has been brought over from the horse.

The immunity actually does not belong to the mouse. It still belongs to the horse. It is stolen property, and will soon be lost. The cells of the horse, not those of the mouse, make the antitoxin. The mouse for the time being becomes physiologically a part of the horse, and it is by virtue of this relationship that the former is for the time being immune to tetanus.

The quantity of blood-serum that must in this supposed case be transferred from the horse to the mouse in order to give immunity to the latter will depend upon the relative weight of the animals and upon the degree of immunity possessed by the horse; and the degree of immunity induced in the mouse will be governed by these same factors.

Subsequent inoculation of the mouse with the tetanus-nuclein, in order to prove its immunity, may awaken the cell-activity of this animal, and then the immunity belongs to the mouse; but this is not true before the introduction of the germ. Behring has understood this point and has given this explanation.

We have seen that in all cases the cause that brings into existence the condition of immunity is a bacterial proteid. Now in order that this inciting cause may induce the condition of immunity, it must act upon something. We say that it acts upon the animal, but with this general statement we cannot be satisfied. Upon what organs of the body does it act? This question can be answered only tentatively at present, and the answer is founded upon the fact that we suspect that certain organs are acted upon, because certain results follow. Certainly, the cell-activity of the invaded host must be altered. The cells upon whose altered activity immunity depends are probably those of the spleen, the bone-marrow, the thyroid and thymus glands, and possibly other glandular organs. As already stated, this answer, which it may be noticed is given with reserve, is founded upon inference rather than upon direct demonstration. However, experimental evidence on this point is not wholly wanting. The disastrous effects that follow the removal or atrophy of the thyroid gland, and the wonderful alleviation

following the treatment of myxedema with extracts of this gland, are now well known to every member of the profession. These facts show that this gland must furnish an antitoxin, which is essential to the preservation of health and life. Lindemann has shown that the normal dog will bear doses of caffeine which cannot be borne by the same animal after extirpation of the thyroid. Tizzoni and Cattani have found that rabbits from which the spleen has been removed cannot be immunized to tetanus.

These facts, together with others to be mentioned further on, render it altogether possible that the organs mentioned are concerned in the production of immunity.

Here an interesting question arises: In what way are these organs concerned in the production of immunity? Do they elaborate antitoxins, and if so what can be said about the nature of these antitoxins? These are questions in which I have been deeply interested for some time, and which I have attempted to solve. In this attempt I have borne in mind the fact that these organs are the sources of the nucleated white blood-corpuscles. Do these corpuscles contain a germicidal or antitoxic substance, and if so what is its nature? They differ from the red corpuscles in being nucleated, and from all other tissues in containing proportionally larger and more numerous nuclei. The chief chemical constituent of nuclei is a substance called nuclein, some of the general properties of which are known to physiologic chemists. Can it be that nuclein is the germicidal or antitoxic substance? Have the nucleins in general or as a class any germicidal action? As methods of isolating the nucleins are known, this question can be answered by experimentation. But before we begin with our experiments we will ascertain whether or not we can find that any such properties have ever been observed in the nucleins. I find that others have thought of the possibility that the nucleins may play a role in the production of immunity. In their very valuable paper, *Ueber Immunität und Gifffestigung*, Brieger, Kitasato, and Wassermann have the following to say:

"With the idea that the highly vitalized leukocytes or lymphocytes are concerned in the destruction of bacteria within the body, and that antitoxin substances are formed by the breaking down of these cells, we began our experiments with the best known and relatively most thoroughly studied decomposition-products of the white blood-corpuscles, the nucleins and the nucleic acids, which we had prepared directly from pus. Later, Prof. Kossel had the goodness to make like preparations for us from pus and yeast, for which we again give him our best thanks. Cholera-cultures served us for the most part in these investigations. However, we found neither a decrease in the toxicity of these cultures on being treated with the nuclein bodies, nor could we render animals proof against the poison by previous treatment with cholera-cultures to which nuclein had been added.

"*A priori*, these negative results were probable because the preparation of the nucleins and nucleic acids requires such powerful chemical manipulations that the resulting substances could only be such as would be devoid of all active energy. Moreover, we knew from previous researches with the bacterial poisons how susceptible similar compounds are to apparently indifferent chemicals, like alcohol, ether, etc. . . . Therefore, we concluded to prosecute our studies with simple, aqueous, feebly alkaline extracts from organs rich in cells."

Having reached these conclusions, Brieger and his co-workers proceed to make their investigations with a feebly alkaline extract of the thymus gland.

This is the only instance, so far as I know, in bacteriologic literature, up to the time of the first publication of my results, in which anyone has even suggested that the nucleins might be germicidal or in any way concerned in the protection of the body against bacterial invasion, either in the production of immunity or in effecting a cure; and it must be admitted that this reference did not afford much encouragement to my theory. However, I was not altogether discouraged, because certainly no one should expect to find a highly active nuclein in pus-cells, the nuclein of which in the very formation of pus has been altered, probably more deeply and destructively than would result from "the apparently indifferent chemical reagents, alcohol and ether." As these German investigators failed to tell how the yeast nucleic acids with which they experimented had been prepared, the hope was left to me that in this might rest the explanation of their failure. This hope found support in the fact that in the preparation of their thymus extract they heated it to 100° C., and certainly this temperature must have had quite as much effect in depriving the living nuclein of its energy as indifferent chemical reagents could have had. The fact that they obtained the results which they did with this extract after it had been heated to 100° is an evidence of the power originally possessed by the nuclein of this gland, for I think that it must be admitted, from the results which I have obtained, that the active agent in the thymus-extract with which Brieger and his co-workers experimented is a nuclein.

At first I tried to prepare an active nuclein from compressed yeast, but the results were not satisfactory. Compressed yeast contains a large amount of water and starch. The large proportion of the first-mentioned constituent caused a very small yield of nuclein, and there were many difficulties in the complete separation of the starch. There were, however, two other and more serious objections to the use of compressed yeast. The first of these is due to the fact that such yeast contains bacteria to begin with, and the task of preparing an active nuclein from it is similar to that of obtaining the same sub-

stance from pus. The second difficulty lies in the fact that compressed yeast contains many dead cells, and an active nuclein can be obtained only from living, healthy cells.

Next, I attempted to prepare an active nuclein from the ordinary brewer's yeast. But I found this also contaminated with bacteria.

At last, I was supplied, through the kindness of the Ann Arbor Brewing Company, and through Dr. Laasche, of Chicago, with unlimited quantities of pure cultures of yeast, without cost, and my thanks are due to the manager of the company named and to Dr. Laasche for this material.

With the aid of Drs. McClintock and Novy I have succeeded in preparing active nucleins not only from yeast, but from several organs of the body as well, and as the further elaboration of the principles of immunity and cure in the infectious diseases depends so closely upon the action of these nucleins, I must be permitted to go somewhat into detail concerning their preparation, their chemical reaction, germicidal properties, and physiologic effects:

YEAST NUCLEIN.—The cells from pure cultures of yeast are washed with sterilized water, then treated with a 5 per cent. solution of potassium hydrate, and filtered through paper (the Falten filter-paper of Schleicher and Schull being used for this purpose). Sterilization of the filter-paper is not necessary. The filtrate is feebly acidified with hydrochloric acid, and the proteid precipitated with 96 per cent. alcohol. The precipitate is washed with alcohol by decantation until the supernatant fluid remains colorless. The precipitate is then collected upon a filter, and, after all the alcohol has passed through, it is dissolved in very dilute potassium hydrate (0.25 to 0.50 per cent.). That this solution contains other proteid bodies besides the nuclein is shown by the fact that it promptly responds to the biuret, xanthoprotein and Millon reactions, but notwithstanding these impurities, solutions of nuclein prepared in this manner have markedly germicidal effects.¹

A purer form of yeast-nuclein may be obtained by digesting out the other proteids from the alcoholic precipitate with hydrochloric acid and pepsin, in the manner which will be described in the preparation of animal nucleins.

The following experiments, in which the impure nuclein-solution was used, will illustrate its germicidal effects. In all cases the nuclein-solution was diluted with sterilized normal salt-solution, then placed in quantities of five c. c. in sterilized test-tubes, inoculated with the germs mentioned in each experiment; and plates made after varying intervals of the time show the germicidal effects. In making

the plates, a platinum loop of constant size (with a diameter of two millimeters) was employed.

In the first four experiments, two c. c. of a 0.25 per cent. alkaline solution of nuclein, containing 0.9 milligram of impure nuclein per c. c. were diluted with three c. c. of normal salt solution, inoculated with the germ, and plates made as follows:

EXPERIMENT I.

Staphylococcus pyogenes aureus.

Time, . . .	5 min.	1 hr.	2 hrs.	14 hrs.	23 hrs.
No. of colonies,	1,110	0	0	0	0

EXPERIMENT II.

Staphylococcus pyogenes aureus.

Time, . . .	5 min.	1 hr.	2 hrs.	14 hrs.	23 hrs.
No. of colonies,	1,490	20	0	0	0

The strength of alkali in this dilute nuclein-solution, not taking into consideration the fact that some of the alkali is absorbed by the nuclein, is 0.1 per cent. The culture of the aureus used in these experiments grows abundantly in a 0.5 per cent. aqueous solution of potassium hydrate.

EXPERIMENT III.

The same solution nuclein as the preceding inoculated with the *staphylococcus pyogenes albus*.

Time, . . .	Immediate.	20 m.	1 h.	2 h.	17 h.	24 h.
No. of colonies,	680	0	0	0	0	0

EXPERIMENT IV.

The same solution of nuclein, inoculated with the *bacillus anthracis* without spores.

Time, . . .	Immediate.	20 m.	1 h.	2 h.	17 h.	24 h.
No. of colonies,	45	0	0	0	0	0

The total amount of impure nuclein in the five c.c. of dilute solution employed in these experiments was 1.8 milligram, or the strength of the solution was 1 part of impure nuclein to 2777 parts of water.

EXPERIMENT V.

The five c. c. used in this experiment contained ten milligrams of impure nuclein dissolved in 0.1 per cent. of potassium hydrate. The germ was the aureus.

Time, . . .	Immediate.	30 min.	1 h.	3 h.	5 h.	24 h.
No. of colonies,	Countless.	5,000	550	490	400	0

Many other experiments similar to this were made, but as the results were uniformly the same, repetition is unnecessary.

EXPERIMENT VI.

A loop of tuberculous sputum, showing from forty to sixty bacilli in each field when stained, was stirred up in beef-tea, allowed to stand for twenty-four hours, and injected into the abdominal cavity of guinea-pig No. 1. Another loop of the same sputum was added to a solution of thirty milligrams of impure yeast-nuclein in 0.08 per cent. of potassium hydrate, and this was also allowed to stand in the incubator at 38° for twenty-four hours, and then injected into the abdominal cavity of guinea-pig No. 2.

At the expiration of fourteen days both of these animals were killed. The omentum of No. 1 was a tuberculous mass throughout; while No. 2 showed not the slightest evidence of the disease.

The solutions of impure nuclein in dilute alkali may be kept at ordinary temperature in glass-stop-

¹ In fact, this is a nucleo-albumin rather than a nuclein.

pered bottles for months, without undergoing putrefactive changes. I have now one bottle of such solution, which was prepared on the 20th of December, 1892. One hundred and fifty milligrams—possibly a much larger quantity—of this nuclein may be injected, when properly diluted, under the skin, without any inconvenience, save slight pain at the time of injection and some soreness in the part, which disappears after a few hours. The last statement is true when the initial dose is small and the quantity is gradually increased. In one case, in which I gave an initial injection of twenty-five milligrams, an erysipelatous redness, as large as a saucer, appeared in a few hours. The temperature went up three degrees and the patient felt some nausea. The redness, however, rapidly disappeared, the temperature fell, and two days later I repeated the same dose without any ill effects. In some other instances I have noticed an elevation of temperature within an hour or two after the injection. This has happened only in those patients in which the size of the dose has been rapidly increased. Yeast-nuclein appears at times to have a cumulative action. When employed in large doses for several consecutive days the temperature may be markedly elevated.

TESTICULAR NUCLEIN.—I have prepared this from the testicles of the bull, dog, guinea-pig, and rat. The testicles are stripped of their investing membranes as soon as removed, rubbed up and extracted repeatedly with a mixture of equal volumes of absolute alcohol and ether. Then the testicular substance is digested for some days (until the supernatant fluid fails to respond to the biuret test for peptones) at 40° C. with pepsin and 0.2 per cent. hydrochloric acid. The undigested portion, which contains the nuclein, is collected on a filter-paper and washed first with 0.2 per cent. hydrochloric acid, then with alcohol. Finally it is dissolved in a 0.5 per cent. solution of potassium hydrate and filtered through a Chamberland filter, without pressure.

This solution is clear, more or less yellow, and feebly alkaline. On the addition of nitric acid a white precipitate forms and dissolves colorless in the cold on the further addition of nitric acid. This nuclein does not give the biuret reaction, but does respond to the Millon test. The nitric acid solution of the precipitate becomes yellow on the addition of ammonia.

This nuclein also has germicidal properties, as is demonstrated by the following experiments:

EXPERIMENT I.

A solution of nuclein of unknown strength, obtained from the testicles of a bull, was diluted with four volumes of physiologic salt-solution, inoculated with the bacillus anthracis, and plates made, with the following results:

Time,	Immediate.	30 m.	1 h.	2 h.	3 h.
No. of colonies,	730	6	0	0	0

EXPERIMENT II.

The same solution inoculated with the aureus.

Time,	Immediate.	30 m.	1 h.	2 h.	3 h.
No. of colonies,	Countless.	2,850	0	0	0

EXPERIMENT III.

A solution of nuclein from the testes of a dog diluted with four volumes of salt-solution and inoculated with the staphylococcus pyogenes aureus.

Time,	Immediate.	20 m.	1 h.	2 h.	17 h.	24 h.
No. of colonies,	680	0	0	0	0	0

EXPERIMENT IV.

Another solution from the same source diluted in the same manner and inoculated with the aureus.

Time,	5 min.	1 hr.	2 hrs.	14 hrs.
No. of colonies,	250	0	0	0

EXPERIMENT V.

As several authors have reported the finding of a germicidal substance in the glycerin extract of certain organs, the following experiment was made: The testicles of a white rat were stripped of their tunics and extracted with glycerin. This extract, diluted with four volumes of salt-solution and inoculated with the aureus, gave the following results:

Time,	5 min.	1 hr.
No. of colonies,	1,240	75

I have used this solution of nuclein in doses of from five to twenty drops, diluted with saline solution, hypodermatically in one case of nervous exhaustion, and from the markedly stimulant effects observed, I conclude that it is to the testicular nuclein that the Brown-Séquard fluid owes its action. These effects, as I have observed them, with the very small doses given, soon pass away, but they are extraordinary.

THYROID NUCLEIN.—The fresh gland is cut into fine pieces, extracted with alcohol and ether, and then digested with pepsin and 0.2 per cent. hydrochloric acid at 40° for two or three days, the digestive fluid being renewed several times and the digestion being continued until the supernatant fluid fails to respond to the biuret test. The undigested residue is collected upon a filter, washed with 0.2 per cent. hydrochloric acid, then with alcohol and ether, and finally dissolved in 0.25 or 0.5 per cent. solution of potassium hydrate.

This solution of nuclein gives a faint opalescence on the addition of nitric acid. It does not color on heating with nitric acid, but becomes markedly yellow on the further addition of ammonia.

A 0.25 per cent. alkaline solution of this nuclein dissolved with an equal volume of physiologic salt-solution and inoculated with the aureus showed a germicidal action as indicated in the following figures:

Time,	Immediate.	10 min.	1 hr.	20 hrs.
No. of colonies,	805	830	256	0

I have not tested the effects of this nuclein on man.

EGG-NUCLEIN.—The yolk (two dozen eggs furnish a convenient amount of material to work with in the laboratory) is extracted with absolute alcohol repeatedly and until all the coloring-matter is removed. The substance is then digested for some days with pepsin and 0.2 per cent. hydrochloric acid. (In one instance I continued this digestion for four weeks, hoping to obtain a residue which would not respond to the biuret test, but this desire was not attained.) The undigested portion is collected on a filter, washed with dilute hydrochloric acid and subsequently with alcohol, and then dissolved in 0.25 or 0.50 per cent of potassium hydrate and filtered through porcelain.

This solution of egg-nuclein is colorless or slightly yellow. Nitric acid produces a slight, white precipitate, which dissolves in excess; this does not turn yellow on heating, but does so beautifully on the subsequent addition of ammonia.

EXPERIMENT I.

A solution of this nuclein in 0.25 per cent. potassium hydrate was diluted with four volumes of saline solution, inoculated with anthrax, and the following figures show the germicidal effect:

Time,	Immediate.	30 m.	1 h.	2 h.	3 h.
No. of colonies,	2,490	350	30	0	0

EXPERIMENT II.

Another portion of the same dilution, inoculated with the aureus, gave the following results:

Time,	Immediate.	30 m.	1 h.	2 h.	3 h.
No. of colonies,	Countless.	2,000	137	0	0

Besides the foregoing sources, I have obtained nucleins from the brain and the spleen, and these also are germicidal in their action. I have not tested the physiologic effects of the nucleins from the egg, brain, or spleen on man. I have employed the egg-nuclein on guinea-pigs, without any apparent deleterious effects.

I have introduced this sketch of some experimental work, illustrating a few of the many experiments that I have made bearing on this point, for the purpose of giving some correct idea of the ground upon which I make the assertion that nucleins are powerful germicides.

I think that all will now agree with me that the nuclein-forming organs of the body most likely have some concern in the production of immunity.

The nucleins formed by these cells or in these organs pass into the blood partly in solution and partly in the form of the multinuclear white corpuscles—the so-called phagocytes.

The germicidal properties of blood-serum are due to soluble nucleins. This statement rests upon work

done by McClintock and myself, and the evidence upon which it is founded will be set forth in a paper to be read before this section.¹

(To be continued.)

A PROBLEM IN ABDOMINAL SURGERY: WHY IS THE UTERUS RETAINED AFTER THE OVARIES ARE REMOVED?

BY HARRIS A. SLOCUM, M.D.,

PROFESSOR OF GYNECOLOGY IN THE PHILADELPHIA POLYCLINIC.

THIS question may at first seem to be a startling one and to savor of that ultra-radicalism which the more evenly-balanced minds in the medical profession are constrained to avoid, but a careful consideration of the facts that have been presented to my observation have led me, at least, to the conclusion that such is not the case; that, on the contrary, there are several good reasons for propounding such a query, and that our patients may be benefited in the future if we will take steps to inform ourselves upon such points as bear directly upon the subject.

This suggestion has been reached by observing the large number of women who have continued to suffer after the removal of the ovaries. On close questioning their pains are found to be just, or nearly, the same as before the operation. Sometimes they are described as being even worse, and, although we should use great discrimination in accepting the statements of a patient who considers herself to have been badly treated, yet I am sure that such suffering as remains is positive and great, while allowing for all exaggeration, conscious or unconscious, on the woman's part.

Having been assured by the operator, and honestly no doubt, that they would certainly be cured and freed from pain if they would consent to an operation, these women have submitted to it hopefully as the last thing to be done after weary months or years of treatment, and have too often failed to obtain the expected relief within varying periods of from six months to three years. These patients wander from one physician to another, and from hospital to hospital, with their pains not only unrelieved but gradually losing hope of relief; and as a rule, the physicians themselves, having learned that an abdominal section has been performed and the ovaries removed, yet the sufferings are just as severe, are often at a loss as to what should be done, and mentally consign the case to the class of "incurables," while they are writing a tentative prescription to afford relief for a time at least.

Continued suffering after removal of the appendages may depend upon a number of causes, and it is distinctly not claimed in this article that hysterectomy

¹ To be published in THE MEDICAL NEWS.

tomy will prevent or remove them all, but, if performed under the conditions to be mentioned, I believe that it will certainly prove a legitimate and satisfactory method of dealing with one of the common sources of pain to the patient and disappointment to the surgeon.

Before determining upon the utility of the measure indicated in the title, a brief consideration is required of antecedent matters, the proper understanding of which will greatly influence us in forming our opinion regarding it.

First, as regards the physiologic relation of the uterus (and its appendages) to the body. The genital organism, considered in respect to the individual, is not at all essential to that individual's life. It is a specialized department designed for the purpose of continuing the species, and is not a vital part in itself. The function of the ovary is to form the ovum; the *raison d'être* of the uterus is to receive and nourish the fecundated ovum; and menstruation is but a side-issue—the removal of furniture for a tenant that was not prepared to remain.

These organs contribute nothing to the maintenance of the body, and their removal, if not forbidden by danger to contiguous parts, evidently cannot affect the general nutrition, interfere with self-support, or lessen the powers of resistance to adverse influences.

To their tremendous importance as factors in influencing the moral life of an individual, and the latent influences that they exert over her equilibrium and well-being, is given full recognition and acknowledgment; but these phases are not now under consideration, our only object at present being to determine upon the relative value of the procreative system as a vital part, or as necessary to the existence of the body.

Much testimony from various sources might be adduced to show the relative unimportance of the genital system *per se* to the general organism, but every physiologist will recognize this; and the physician, when recalling that we are dealing with a diseased and perverted system, will hardly fail to do the same.

The dominant nerve-supply of the uterus is that of the sympathetic, but it is probably of direct and physiologic use only during pregnancy, because the unimpregnated uterus is really an immature organ, and doubtless the nerve-fibers and ganglia are equally immature, so far as a correct performance of their duties is concerned, and this imperfect nerve-action may largely account for the predominance of the so-called hysterical element in women. It may be presented, in rebuttal, that pregnancy, when the nerves are developed, often causes still greater abnormal developments of mentality; but we should remember the artificial surroundings and ac-

companiments of the majority of gestations in civilized life, and the vast number of pregnancies that have for years been preceded by symptoms of uterine disease, permitting the inference that the muscular home of the fetus is in an imperfect condition for its work from the very beginning.

A complete knowledge of the power that this nerve-supply to the uterus exercises over the body in a healthy woman has not yet been demonstrated, but the untoward effects when these nerve-endings are disturbed are often manifest, and many cases in my experience present evidence that such disturbance exists in a large number of those who have already had their tubes and ovaries removed.

Let it be remembered that in the greater number of cases in the class to which I refer, inflammation has established itself not only in the tubes, but also in the lining membrane of the uterus, and in the canal tunnelling the uterus and leading to the tubes.

In the hands of the advanced operator of to-day this fact is recognized, and an effort is made to meet it. The uterus is curetted and drained and the appendages are subsequently removed, but the tunnel cannot be reached, and it remains to form a perpetual point of departure for subsequent attacks of endometritis, extending to an organ which is as disposed as ever to participate in such inflammation, whose nerve-supply is ever ready to indiscriminately affect the body adversely, causing the old pains and added reflexes, and which is yet deprived forever of its functions.

It is like an eye that cannot see, yet would bring about all the untoward results of a vicious refraction; like an ear that can no longer hear, yet tortures the body with vertigo and tinnitus; or like a brain that can no longer direct, yet brings to bear upon the body all the vagaries and illusions of an undeveloped or imperfect center.

The next question is: Would the removal of the uterus add to the mortality? Practical experience in this direction shows that the length of the operation is not greatly increased. If an operator begins an abdominal section with the direct intention of removing uterus and appendages, after having ascertained that the latter are irretrievably diseased, the application of another ligature to each uterine artery, the separation of the bladder from the uterus, and the severing of the latter according to Baer's method, with the subsequent attention to peritoneum and cervix, would take from ten to fifteen minutes. So much for the time. The testimony of many writers is to the effect that they are surprised at the small amount of shock sustained by their cases of hysterectomy. In the records of English and American journals, at the hands of many of my confrères and in my own experience, the same holds true.

It seems to shock the patient less to remove the uterus with its appendages than to remove the latter

alone, and I think the explanation lies in the fact that we at the same time remove the terminal nerve-filaments of the inferior hypogastric plexus of the sympathetic; that is to say, the active, working extremity of the nerve. A moment's consideration will recall the difference in receptivity to impressions between that possessed by the sensitive, developed nerve-ending and its trunk. A ray of light falling on an inflamed retina might cause agony, yet the cut end of the optic nerve might be exposed to ten times the amount without recognizing its existence.

Without doubt, the time required in operation is not greatly increased, while the subsequent shock appears to be really lessened.

Another danger that threatens is hemorrhage. In a paper read at the last meeting of the American Gynecological Association several deaths were reported from hemorrhage caused by slipping of the ligature, but one acquainted with the correct method of performing Baer's operation will readily see that if this is carried out as it should be, such a thing would be practically impossible, as the ligatures have tissue on both sides and cannot slip; they may become untied, and so might any ligature. Sepsis from the cervical canal, again, when the operation is rightly performed, is unknown to me. Reasoning from a knowledge of the condition of the tissues in the different parts, one would expect to have less danger from sepsis than if the cut ends of the tubes are presented to the peritoneum, for these are the very parts in which the disease is pronounced, while the cervix is generally healthy and would be far less likely to contain germs, and would, moreover, act as a far better drain than the occluded stump of tube and cavity of the uterus. When the uterus, tubes, and ovaries are removed *en masse* the infected cavity is not opened, the pus is sealed off in the upper part and cannot come in contact with the tissues.

Undoubtedly oöphorectomy has been performed, in many cases with subsequent cures, and my proposition is presented neither to disparage previous attainments, nor as a measure to be followed indiscriminately and without judgment, but because my experience with hospital and dispensary post-operative sufferers has led me to inquire into the causes of their sufferings, and I find that although some of these are due to adhesions, fistulæ, and hernias, the principal source of trouble is the persistence of a chronic metritis or endometritis, almost always involving the cornua, inaccessible, and practically incurable.

My proposition, therefore, is that we should consider the propriety of removing the uterus, as well as the appendages, in those cases in which both ovaries and both tubes are diseased beyond repair, and when their removal is clearly indicated; inasmuch

as the uterus, if retained, is not only absolutely useless, but often becomes a menace to the system.

This measure has been advocated by other writers. Since beginning this paper my attention has been called to a statement made by Dr. B. F. Baer in an article in the *New York Journal of Gynecology and Obstetrics* for September, 1893; but my opinion has been reached almost entirely through my own observation.

I have said that this measure is not to be followed indiscriminately and without judgment. Cases will present themselves in which it would be unwise to carry it out, and each operator must exercise his judgment with each case; but the general proposition holds true, and one need but hear the symptoms and examine the tender, enlarged uterus in these barren patients to feel convinced that this organ should have been taken away when the abdomen was opened, as it has left the patient only a companion to her appendix vermiformis—useless, and possibly dangerous.

One question yet remains to be answered. Granted that patients are not having their lives risked to a greater degree than in oöphorectomy, have those patients who have already undergone hysterectomy given evidence of the benefit we are striving to obtain?

A just conclusion is difficult to reach for two reasons: first, because of the varied methods of performing the operation, and second, because of the character of the previous disease. The old method of constricting the cervix—a barbarous and imperfect surgical procedure in the light of to-day—often subjected the tissues to a painful and perilous tension and invited hyperemia; adhesions to the anterior abdominal wall were common, and we all know the malevolent influence of adhesions; the amount of uterine tissue requisite for the application of the *serre-naud* was such that the endometrium was often encroached upon, and the stump that remained had poured into it the vast volume of the uterine artery—an inciter to riotous cell-action.

The greater number of hysterectomies have been performed by this or some similar method down to a recent date, and I think that a judicious observer would hesitate to draw a conclusion as to the results of an ideal hysterectomy from patients who had been subjected to one of the old methods of operation.

The character of the previous disease is so important a factor that it would be gross negligence to ignore it. A hysterectomy for carcinoma might readily fail to bring about such a restoration to health as one would desire. It is almost impossible to be sure that the whole of the diseased tissue has been removed. To give a just verdict, the operation should be the one approaching the nearest to surgical perfection, and the cases should be of the

character specified. Those that I have seen answer the question in the affirmative, *i. e.*, they *have* given evidence of such benefit.

An old Irish woman who was cleaning the clinic-room, saw a jar containing a specimen, and asked what it was. On being told that it was a womb with tumors attached, taken from a patient who was now well and working hard, she replied: "Well, well, she won't live long. Nobody can without their womb. Everybody knows that."

This dictum from an ignorant person is a faint reflection of the attitude of the medical world in general. The uterus has long been labelled *noli me tangere*, for reasons too numerous to be recounted here, and I am an advocate of such a policy so far as indiscriminate operation is concerned, feeling that it is our duty to our patients to make every effort to bring about a normal condition without recourse to surgery; but when the latter is shown to be inevitable, it is equally our duty to do the work as thoroughly as possible.

So far as I have been able to observe, removal of the uterus, when the ovaries and the tubes are doomed, does not lessen the feminine attributes of a woman. The knowledge that all diseased tissue has been removed and no useless organ allowed to remain is a comfort to the surgeon; its absence does not appear to predispose to vaginal descensus or other lower pelvic disorder, and, by allowing the minimum of blood to the cervical stump, just sufficient to nourish it, reduces the chances of epithelioma—the dreaded bane of so many women—almost to the vanishing-point.

ORIGINAL LECTURE.

LEPROSY.

Abstract of a Clinical Lecture, delivered August 9, 1893.

BY ALBERT ABRAMS, M.D.,

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I WISH this morning to show you a few cases of leprosy. Before so doing, however, let me review some of the main points regarding the symptomatology of the disease.

In your text-books you will find many synonyms of leprosy; they are chiefly *Lepra Arabum*, *Elephantiasis Græcorum*, *Leontiasis* of the ancient Greeks, and *Zaraath* of the Hebrews. This multiplicity of terms subserves no other purpose than that of interfering with the proper study of the history of the disease.

Leprosy is a chronic infectious disease, presenting under the microscope essentially the same histologic elements as we find in the granulation-tissue of new-growths.

Two types of leprosy are usually recognized: tubercular and anesthetic leprosy. Both types present certain prodromal symptoms of an indefinite nature, such

as languor, drowsiness, loss of appetite, chills, etc. Tubercular leprosy, as a rule, is preceded by spots which you see in this case, at first of a pale or bluish-red hue, while later the maculæ become pigmented. This macular condition may precede tubercular leprosy by many years. If, as often occurs, the maculæ become the seat of tubercles, the skin becomes thickened and raised, leading to the formation of nodules varying in size from that of a pea to that of a walnut. The most frequent seat of these nodules or tubercles is on the skin of the face or hands, although the subcutaneous tissues and the parenchyma of the viscera are not exempt from invasion. When the nodules develop upon the face they may be circumscribed or conglomerate. In the latter case they give the face a peculiar leonine expression, which is symptomatic of the name used by the ancient Greeks, *viz.*, *leontiasis*. The tubercles may form on the mucous membranes of the eyes, nose, mouth, throat, and larynx. In the case before us you find the palate deformed by a dense infiltration of leprosy new-formation. Like all new-formations the tubercles undergo certain retrograde changes. They may atrophy, soften, and form abscesses, or they may undergo ulceration; leading, in the latter instance, to what are termed leprosy ulcers. In many instances they may remain stationary, and undergo no change for many years. When they soften or ulcerate, they are accompanied by all the somatic symptoms of septic infection.

The second variety is known as anesthetic leprosy, as well as by the terms, *lepra mutilans* and *elephantiasis glabra*; this type of leprosy may develop as such from the beginning, or it may follow or accompany the tubercular variety of the disease. The nervous symptom in the beginning is usually hyperesthesia, followed by anesthesia of the involved districts. Trophic changes of the skin accompany this type of leprosy. In this case you will observe nearly all the trophic changes. On the palms of the hands the skin is tense, glossy, and parchment-like, whereas on the dorsum of the hands the skin is wrinkled and bullæ are present. At certain points you notice the absence of pigmentation, whereas on the other parts the pigmentation is increased. On account of the trophic changes, coupled no doubt with traumatism, the fingers and toes fall off, leaving painful stumps; in many cases all the fingers and toes are lost in this way. Mutilation occurring after this manner is spoken of as *lepra mutilans*. The cases I now show you are of the anesthetic type. You will note that there is anesthesia as well as analgesia of the hands and forearms; there is no regularity in the distribution of this anesthesia; in other words, the distribution of the anesthesia does not follow the course of any particular nerve or nerves. If you palpate the ulnar nerve of this patient you will find it thickened and marked by nodosities.

These changes in the nerve are the result of a perineuritis. The nerves most frequently involved by perineuritis are the ulnar, the median, and the peroneal.

BACTERIOLOGY.—In the year 1880, Dr. Armauer Hansen, of Bergen, claimed to have discovered in the nodules of the disease the bacilli of leprosy. This observation was corroborated by Neisser, since which time these organisms have been generally recognized as the pathogenic microbes of leprosy. The bacilli of leprosy resemble the bacilli of tuberculosis, not only morphologically, but

in their reaction to the Ehrlich method of staining, thus differentiating both pathogenic microorganisms from all other varieties. Unlike the tubercle-bacilli, the bacilli of leprosy are as sensitive to aqueous anilin solutions as are the majority of all other microbes. Cultivation-experiments with the lepra-bacilli, as well as attempts at inoculation of animals have been practically negative. It is probable that the nodules and infiltrations of leprosy are a result of the specific action of the bacilli. We find them in the skin, in the connective tissue surrounding the nerves, in the lymph-glands, and in the viscera; they are practically absent in the blood.

DIAGNOSIS.—The difficulty in diagnosis is only encountered in the earlier stages of the disease, before tissue-changes have developed. At this period leprosy may be confounded with syphilis, lupus, vitiligo, multiple sarcoma of the skin, and syringomyelia. I cannot at this time enter into the points of differentiation.

Confined to the district of Brittany there is a peculiar affection known as Morvan's disease, so called after the physician who described it. It is a chronic affection, characterized by neuralgic pains, anesthesia, and painless whitlows. According to the recent observations of Zambaco, Morvan's disease is nothing else than lepra mutilans.

In April, 1891, as chairman of the committee on pathologic anatomy of the Medical Society of the State of California, I read a paper on "Parenchymatous Aspiration." I shall limit myself in describing this method of diagnosis in leprosy lesions.

All that is necessary in carrying out parenchymatous aspiration is an antiseptic hypodermatic syringe. The syringe that I show you has a large barrel, the object being to secure better suction. The packing is made of asbestos, while the needle is of platinum. By washing the barrel of the syringe with alcohol and heating the platinum needle in the flame of a lamp, I reduce the danger of septic contamination to a minimum. By firing the ordinary hypodermatic syringe you can make it aseptic for all practical purposes.

This is done by filling the syringe with alcohol, and as you eject the fluid you light it as it escapes from the needle. We will now proceed to apply this method of diagnosis: You first render the arm of the patient in this case ischemic by the application of a rubber bandage, although this maneuver is not really necessary. You next introduce the hypodermatic needle into a leprosy nodule, and by drawing the piston back you obtain a very small amount of serum. This serum will contain the bacillus lepræ, which you can demonstrate by appropriate staining. The same method is applicable in searching for the bacilli in infiltrations, lymph-glands, and in the viscera. You will find it difficult at times to remove any fluid from the leprosy lesions, in which case you may have recourse to one or two maneuvers; first, if you can discharge nothing from the needle you may separate the latter from the barrel of the syringe; now draw into the barrel of the syringe one or more drops of distilled water; by discharging the fluid through the needle, in which are presumably lodged the aspirated products, you may get sufficient material for staining.

If this procedure does not suffice in securing sufficient material for microscopic examination, then the following method may be adopted: The syringe is partially

filled with an indifferent solution of salt, which is injected into the diseased tissue, the needle remaining *in situ*; after waiting until the fluid has presumably taken up sufficient pathologic products, it is aspirated into the barrel of the syringe.

The method I have just described bears some resemblance to the procedure of Manson (*Lancet*, August 23, 1884). This observer recommended the following method of demonstrating the bacilli in leprosy patches: The patch is compressed in the jaws of an ordinary thin-bladed pile-clamp. This has the effect of drawing out the blood from the occluded tissues, and then the patch is pricked with a needle, and the exuded fluid is stained for the bacilli. You will observe from the description I have given you of Manson's method that it is inapplicable in leprosy of the lymph-glands, nerves, and viscera.

ETIOLOGY.—The main question is whether heredity or contagion plays the chief part in the spread of the disease.

Arning, one of the most competent observers, denies that heredity is the sole etiologic factor. Leprosy is a disease, so he says, perfectly independent of climatic and telluric influences. He urges most strenuously that leprosy is introduced and spread solely by leprosy individuals. It is exclusively a disease of mankind, thus differing from tuberculosis, which also attacks the common domestic animals. Under favorable conditions the disease is probably transmissible directly from man to man or through food; the latter, however, is not proved. The fish-diet theory of Hutchinson is untenable on account of its exclusiveness. Examinations made by Rake of the chief articles of diet among the negroes and coolies of Trinidad show no evidence of lepra-bacilli. The results of direct inoculation seem to demonstrate that leprosy in a practical sense is not contagious. The successful inoculation of the murderer Kearin cannot be regarded as conclusive in the light of contradictory evidence.

Thus, a Norwegian physician inoculated himself and twenty healthy individuals with leprosy material, without result. The same negative results attended the experiments of Profeta in ten cases.

As Arning says, we shall never be able to decide the question of direct contagion, or of infection through the intervention of the ground, of water, or of food, till we are able to show a comprehensible difference between living and dead bacilli, either by culture or by constant successful inoculations on the lower animals.

TREATMENT.—There is no specific in this disease. Improvement of hygiene and dietetics will do much toward prolonging the life of the individual. The value of chaulmoogra oil has not been definitely determined. The oil may be administered in capsules. The dose is from 3ss to 3j daily.

The treatment by excision of the tubercles in the early stages of the disease may prove of some benefit. Germicides are without practical value. Arning has caused a disappearance of the tubercles in many instances by the local application of an ointment composed of salicylic and pyrogallic acids.

PROPHYLAXIS.—There is no doubt that strict confinement of leprosy individuals is of the same value in preventing the dissemination of the disease as would be the isolation of tuberculous patients.

CLINICAL MEMORANDA.

A CASE OF ABSCESS OF THE SPLEEN.

BY WILLARD C. HOWE, M.D.,
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THE occurrence of abscess of the spleen would appear to be of extreme rarity if the literature at my command is to be taken as a criterion. In the leading surgical works very little is said regarding this particular pathologic condition, and a careful search of the best journals fails to reveal the records of but few cases. Because of its obscure history and progress, and the difficulty of an early accurate diagnosis, it is very unfortunate, if it is at all common, that so few cases have been reported for the benefit of the profession. A painstaking examination of the books and periodicals at my disposal discloses reports of but nine cases of abscess, one of purulent cyst, and one of perisplenic abscess.

William H. Flint¹ mentions one case of supposed abscess of the spleen in which there was free expectoration of pus and final recovery. J. M. Flippen² reports one case in which he removed nine pints of pus by free opening. Recovery followed. Hodenpyl³ presented to the New York Pathological Society a specimen of abscess of the spleen. Death was due to chronic nephritis. Joseph Levi⁴ reports two cases. Mena⁵ records a case in a boy sixteen years of age, in which the abscess was consequent upon traumatism. There was vomiting of pus and also its passage from the bowels. Recovery ensued in eighteen weeks. M. Chondhoory,⁶ of India, observed among thirty thousand cases of malaria only three cases of abscess of the spleen. One freely opened and was treated by drainage, boric lint, and iodoform; and recovery took place. Porge⁷ records a case of purulent cyst of the spleen, and Councilman⁸ presented to the Johns Hopkins Hospital Medical Society a case of perisplenic abscess.

The following case was one of extreme interest to me, and because of certain points detailed in the history, would seem quite rare.

On August 7, 1892, I was called to treat C. C., an American, single, twenty-one years of age, by occupation a well-digger. For some time he had been working unusually hard, his ambition exceeding his strength. Up to within three weeks, his health had been good. Except for the usual diseases of childhood he had never known a sick day.

Two weeks before, he had consulted a physician regarding a pain in his left side. A "shot-gun prescription" was given, but as this did no good the man went to another physician who without making the least examination or asking any questions, except as to the location of the pain, prescribed a chloroform liniment for external application. After three or four days' use of this, with no improvement, the man sent for me.

I found him lying upon his right side, with the left limb slightly flexed, and complaining of a dull, heavy pain in the left hypochondriac region, with slight tenderness on pressure. His temperature was 102°; pulse 120; respiration 18; the bowels were regular and the kidneys acting normally. Careful examination disclosed the following condition: A slight bulging over the normal location of the spleen; the ninth and tenth intercostal spaces were obliterated; the area of splenic percussion-dulness was increased in a direction downward and forward for about two inches below the border of the ribs.

Palpation revealed a tumor arising from the left hypochondrium. It was superficial; its edges were rather blunt, and its anterior border was notched. With one hand behind and the other in front it was found to be mobile and tender on pressure. Deep inspiration was painful and occasioned a downward movement of the enlarged mass. Upon auscultation a distinct friction-sound was heard. The only sharp pain complained of was upon deep inspiration or when the tumor was moved during the examination or upon a change of position of the body. The erect posture caused the tumor to drop somewhat downward. Taking these points into consideration a diagnosis of splenitis and perisplenitis was made. The only conditions likely to simulate this and obscure the diagnosis would be fecal accumulation in the intestine (splenic flexure of the colon) and a floating or enlarged kidney. Fecal masses in the intestine could for the following reasons be excluded: The percussion-dulness did not correspond with the course of the colon; pressure left no depression, the enlargement being elastic, whereas fecal accumulations are not so. Finally, the bowels had been regular in action and the passages normal in appearance.

Tumors of the kidney are more fixed; they do not follow the respiratory movements, and are not displaced by changes in body-posture.

As ice was not to be obtained, I ordered cold cloths applied and changed frequently night and day. Quinin in four-grain doses three times a day, was given, and morphin sulfate, gr. $\frac{1}{8}$ in pills, was left to be taken from every two to four hours, as necessary, to quiet pain. The spleen continued to enlarge until it filled nearly half the abdominal cavity. The temperature ranged from 100° to 103°; the pulse from 100 to 120.

The pain now became more severe, the countenance assumed an anxious expression, and there was rapid loss of flesh. No fluctuation was to be obtained, but thinking an abscess was forming I ordered hot poultices applied continuously. Small boils the size of a pea began to form in profusion upon the neck, face, back, and anterior aspect of the arms. The lymphatics of the groin and axilla became enlarged and tender. On October 6th a consultation was held with Drs. J. H. Brower and O. W. Phelps. Dr. Brower agreed with me as to the location and character of the trouble, but Dr. Phelps considered it a plain case of abscess of the kidney.

The urine being normal in quantity and appearance, and showing no sign of pus or albumin upon several very careful chemical and microscopic examinations, together with the fact that we had a tumor arising from the left hypochondrium that was superficial, movable, with blunt edges and a notched anterior border, confirmed our diagnosis at least as to the location of the diseased pro-

¹ Reference-Handbook of the Medical Sciences.

² Times and Register, Philadelphia, 1891.

³ Medical Record, New York, 1891.

⁴ Satellite of the Annual, 1892.

⁵ London Lancet, 1892.

⁶ British Medical Journal, 1888.

⁷ Journal de Médecine de Bordeaux.

⁸ Johns Hopkins Hospital Bulletin, 1892.

cess. The quinin was continued in two-grain doses during the entire time, and ferrum redactum in three-grain doses was given three times a day.

The diet consisted of milk and beef-extracts. No stimulants were used. On October 11th Dr. Brower again saw the case with me, and we decided to make a free opening into the spleen. This was accordingly done between the axillary lines and just below the border of the tenth rib. About two quarts of thick pus were evacuated, together with small particles of broken-down splenic tissue of a mottled-gray appearance; the cavity was washed out with a warm boric-acid solution, a drainage-tube was introduced, and the whole was covered with iodoform-gauze and proper bandages. The temperature declined to normal, the pulse to 90, and the pain was materially lessened, but not entirely removed. The cavity was washed out daily and the drainage-tube finally withdrawn October 18th, and the wound closed. The spleen was very perceptibly smaller. On October 22d the temperature again began to rise, and the pulse to run up, the pain to return, and by the 29th all of the symptoms had returned with the same intensity as they had presented before the abscess was opened. Thinking the old cavity was refilling it was reopened, with negative results.

The bowels moved naturally on the evening of the 28th, but caused great pain, and restlessness continued during the night. The morning of the 29th the man felt a sudden desire to go to stool. A large quantity of clear pus streaked with blood was passed. In the next four hours the bowels moved eleven times, the character of the discharge being the same; the movements then ceased, and from that day on were quite normal. On November 5th the man was seized with a hard coughing spell and expectorated pus freely. This continued for about four weeks, but gradually ceased; strength returned, and on January 15th he was discharged cured. He has worked hard all summer and is now in good health. The case was also seen by Drs. R. D. Clark and A. DeBey, who agreed with us as to diagnosis and treatment, the latter being tonic and supporting from beginning to end, with free opening so soon as pus was known to exist. In this case the cause was a bruise. No septic trouble of serious moment developed, and recovery was a very gratifying surprise, as a fatal termination had been predicted.

AMPUTATION AT THE HIP-JOINT FOR RECURRENT SARCOMA OF THE THIGH.

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AMPUTATIONS at the hip-joint, with many others of the so-called major operations, have lost much of their formidableness through the efforts of surgeons to simplify the methods of operating, and to so carefully estimate all the factors in connection therewith as to render their performance much less of an undertaking than formerly. From the same causes the mortality records from this and other kindred operations are being constantly lowered. Not long ago this operation was regarded as a *dernier ressort*, and many times refused

consideration by the surgeon, as offering too few chances for success. That such fears are ungrounded is undoubtedly true, and this is supported by the following case, which was looked upon by those in consultation as one which would result in death were the operation attempted.

The history of the case is as follows: Miss N. G., aged twenty-nine, in 1878 noticed a slight fullness at the middle third of the inner and posterior portion of the right thigh. Giving no pain, it gradually enlarged for a year, when it reached the size of an orange. It was removed, and consisted apparently of a simple fatty growth, enclosed in a distinct capsule. Six years passed by, when the cicatrix began to bulge, and soon afterward another growth made its appearance, being larger and more nodular. This was excised, and consisted of a number of encapsulated growths of a fatty nature, but containing more stroma. Care was taken to remove all traces of the growths and sacs, some of which were quite small. Recurrence took place in eighteen months, during which time the growth extended downward. Removal now showed softening in the structure of the growths, and many small ones rolled out in their capsules, looking not unlike eggs. Recurring after a year, the mass reached down toward the popliteal space, and assumed large proportions. The operation at this time was attended with difficulty, as the sheaths of the femoral vessels were involved and laid bare during the procedure. The neoplasm could not be entirely removed without ligating the femoral artery, and as this was not considered advisable, an early recurrence was anticipated, which followed in six months. As the mass had not extended any higher than the upper third of the thigh from the first, a high amputation was advised, but refused by the patient. An attempt was therefore made for the fifth time to remove as much of the growth as possible. Its character had changed decidedly, the mass having



become colloid and indistinct, spreading itself in all directions in and among the muscles. The wound, after this operation, never healed, but a large spongy mass protruded into the popliteal space, giving rise to considerable pain and numbness in the lower leg. The patient's condition had been very poor for some time. She was excessively anemic, had entire lack of appetite, was losing flesh rapidly, and had given up hopes of ever being relieved.

Advice was now given strongly in favor of hip-joint amputation as the only practical thing to do. It was accepted.

On July 8, 1893, the operation was performed at the Troy Hospital. The prognosis at the start was very unfavorable, as the pulse was feeble, high, and irregular. In this case it was very necessary that the operation should be so performed that the loss of blood would be reduced to the smallest possible quantity, and as well that the procedure should be completed as rapidly as possible. I had anticipated this by giving the subject careful thought and study for several days, and after going over the field of methods advised, discarded them all as too risky. I then planned and performed the operation as follows:

After anesthetizing with the Vienna mixture, I first ligated the femoral artery as it passed under Poupart's ligament, securing it above the profunda by the ordinary incision, which was closed at once with silkworm-gut sutures. There was no difficulty in performing this rapidly, although the presence of considerable adipose tissue necessitated a deep wound. Next, a longitudinal incision was made over the joint, *à la* Langenbeck, reaching from just below the spine of the ilium to below the trochanter. This was carried down to the bone. The soft parts being strongly retracted, all muscular attachments to the outer segment of the femur were severed. By rotating the bone first outwardly, then inwardly, the remaining muscles were cut away and the capsule exposed. Forced adduction of the leg gave room to open the joint, disarticulate the head of the femur, and divide the ligamentum teres. The separation of the soft parts from the bone was carried down, exposing the entire upper third of the femur, which was thus thrown out of the wound. This step of the operation, in all cases the most difficult on account of the many and close attachments of muscles to all sides of the upper part of the femur, was made more tedious by reason of the compression caused by an elastic band, which had been drawn around the highest point on the thigh as a safeguard against additional bleeding. As was afterward proved, however, this was of no value, and should be dispensed with, as it only hinders free access to the deep joint-structures. As the third step, a circular incision was made around the thigh, as high up as possible, and after the skin had retracted, a sweep of the knife severed all remaining tissues, removing the leg. There was but very little arterial bleeding, and but two or three small vessels needed ligating. The femorals were safe. After trimming up projecting muscular fasciculi, nerves, and tendons, intermediate silkworm-gut sutures were rapidly inserted and the stump dressed. Despite a rapid operation and little or no loss of blood, the patient's condition at the close was very poor.

Hypodermatics of brandy and nitroglycerin, hot bags, and other restoratives were administered, upon which the patient rallied. Lack of vitality evidenced itself by a breaking down of the fatty tissue in the stump, in the course of a few days, causing the flaps to separate. Supporting dressings were daily applied to the stump, and a slow but uninterrupted recovery took place.

In regard to the method of operating, the one employed in this case gave me the greatest satisfaction. The primary ligation of the femoral artery removes the necessity of considering the question of whether or not this very important factor in the operation can be met

promptly and at the critical time. There certainly must not be any delay in so doing, for in a large majority of cases so advanced as to require the operation of amputation at the hip-joint, a few spurts from the artery would close the scene. So, to be assured of success as far as this factor is concerned, we should ligate the femoral artery first, and insure safety. The relief of mental anxiety should always be considered as an important duty.

As to the collateral circulation, there is fully sufficient to nourish the stump, and in this case no shrinkage or sloughing points were observed. To attempt by the old-time methods of operating to grasp the contracting bleeding mass and control the femoral is almost impossible, as is proved in less bulky stumps.

The use of needles and elastic bands and ligatures is, to my mind, equally dubious. The needles, although inserted presumably in a safe anatomic direction, may pierce the large vessels, especially if an anomaly exists, while in cases of emaciation of the parts or great swelling, difficulties immediately present themselves. Elastic bands passed around the entire circumference of the thigh in this locality do not carry any assurance of complete occlusion of the main trunks, as, lying so deeply and surrounded by so many projecting points of bone over which the bands ride, the pressure exerted by such bands is insufficient to shut off the current of blood.

The causes of death from amputation at the hip-joint are named as three: hemorrhage, septicemia, and shock. The primary ligation of the femoral artery removes the possibility of death from hemorrhage. The surgical technique of to-day presents the means by which we may remove the possibility of death from wound-infection. Giving the greatest care, by painstaking administration of stimulants and tonics, to the patient's system before, during, and after the operation, reduces to a great degree the liability to a fatal issue from shock. There are exceptional cases in which, through previous loss of blood from ulceration of growths, or systemic poisoning from absorption from ulcerated surfaces, or an exhausted condition from long-existing disease, these determining factors in a prognosis may be considerably influenced. However, even frequently handicapped by these, I believe that in primary amputations of the hip-joint we should confidently look for a considerable reduction in the percentage of mortality as at present rated.

**RHYTHMIC TRACTIONS OF THE TONGUE IN
ASPHYXIA FROM CHARCOAL FUMES, AND
REPORT OF A CASE OF ASPHYXIA
NEONATORUM REVIVIFIED BY
LABORDE'S METHOD.**

BY ALBERT S. ASHMEAD, M.D.,
OF NEW YORK.

THERE seems to have recently, and very seriously, come into vogue a system of revivification, proposed by Dr. Laborde, of Paris, which is called by its author *the method of rhythmic tractions of the tongue*. As early as 1874 rhythmic tractions of the tongue were performed at Tokio, for the resuscitation of persons asphyxiated by carbon. This was the method as I have seen it employed and have employed it myself at the Tokio Hospital:

The patient having been placed upon the operating-table, brandy, largely diluted with hot water, was injected into the rectum, as much as it would receive. The Sylvester method of artificial respiration was employed, and modified as follows: At each elevation of the arms above the head the tongue was drawn forward by an assistant, and rapid passes with paper fans, soaked in water and aqua ammoniac, were made over the mouth, to get into the lungs as much vapor of ammonia as possible. The tractions were from 18 to 20 to the minute. In a very short time, in the successful cases, the return of the capillary circulation was noticed first in the toes and then to creep up the lower extremities.

The first case which I attended was in a Japanese child, three years old. It had been poisoned in the beri-beri season by the charcoal fumes of the *hibatchi*, the little Japanese stove. Carbonic poison is frequent in the summer months, owing to the necessity of keeping the sliding doors closed in the daytime on account of the wet weather. With us this kind of accident occurs more usually at night; but the Japanese stoves are always cold at night, because the people cannot then attend to the necessary ventilation.

It is therefore to the Japanese that the honor of originating the method of resuscitation would at first seem to belong. There is even in the use of the ammonia a scientific point very creditable to Japan. Ammonia furthers the separation of carbon poison from hemoglobin, and carbon greedily absorbs 90 per cent. of ammoniacal gases.

But it ought, in fairness to Dr. Laborde, to be added that, although his discovery would seem, by what I have said, to have been anticipated by the Japanese, it is really not so. Their method, based on another idea and aiming at another immediate action, is really another method. The Japanese doctor means to get ammonia into the lungs, and, with that object in view, he draws forward the tongue in order to clear the passage. It is evident by what will be said and quoted, that the object of Dr. Laborde's method is to incite respiratory movements.

Laborde's method of rhythmic tractions, as used by Dr. Ettore, of Rimini, Italy, in the case of stillbirth following uterine inertia and premature detachment of the placenta, the child having still hardly perceptible cardiac pulsations, was as follows (he had failed in the attempt of catheterism as advised by Schroeder, and in the application of the methods of Schultze and Pacini):

"Having placed the newborn in a half-sitting position on the border of the bed, and having him held in that position by an assistant, I opened the buccal cavity, and taking the tongue between the thumb and index finger of the right hand, I began to perform on it tractions, at short and regular intervals, intensifying them gradually; and what was not my amazement and my delight when, after the time necessitated by about twenty tractions, the little thorax heaved, while at the same time the bambina uttered a faint squalling. Encouraged by this success, I continued the tractions and sousing simultaneously the little body with very cold water—a cutaneous stimulation, which, as I have said, had been ineffective in the first instance—I obtained after a short while a regular breathing, complete, with a wailing now quite vigorous."

Here is Dr. Roux's (of L'Orient, France) report of the use of the same method in another case: "When I came, the head was at the superior strait with prolapse of the cord. On auscultation the stethoscope indicated no heart-beat. The Tarnier forceps was promptly applied. The child did not breathe, the heart-beats were hardly perceptible to the hand, and very rare. The tongue-tractions produced a hiccough at rapidly decreasing intervals, followed by regular breathing. The first crying came after forty minutes."

The purpose of all attempts at resuscitation in case of any asphyxia is to arterialize the blood quickly. This can only be done by introducing oxygen and eliminating carbonic acid. The tractions open the aerial channels, and this is all that the Japanese method aims at producing. Laborde's method has for its object to call into existence respiratory movements.

The ammoniacal fanning is, however, an additional stimulant to respiratory movement—only its principal object is to introduce a substance that will antagonize carbon.

The application of Dr. Laborde's method to the case of neonati shows most strikingly the difference of the principle on which it and the Japanese methods are founded. For in the case of the new-born there is no poisoning gas to be overcome, except what would be naturally developed in the organism, the object of this treatment being simply to establish respirations.

Two nights ago I myself made use of Laborde's method, with a modification borrowed from Sylvester's method, in conjunction with the Japanese fanning. In the child of a unipara, stillborn, after protracted labor, with a posterior position, and the application of forceps, thirty or forty tractions were followed by the first gasp, and gradual resuscitation followed. Household ammonia and water were used for the fanning. Terebinthinate preparations may be substituted for ammonia. Turpentine vapor is an oxidizing agent in the same degree as ammonia.

A CASE OF LEPTOTHRICTIC PHARYNGEAL MYCOSIS.

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DURING last winter the following rather rare affection of the throat presented itself for treatment. Mrs. A., twenty-seven years of age, said that she had been treated for several weeks by her physician for a "hacking cough and sore-throat." She was much alarmed about herself and feared pulmonary trouble. She remarked that something must be growing on the sides of her throat, as it felt rough and dry. Her voice was slightly changed, and an examination showed the tongue slightly coated with a white fur. The mucous membrane of the pharynx was somewhat congested and both tonsillar surfaces were thickly studded with white pyramidal bodies resembling the soft cheese known as "cottage curd." Similar bodies were scattered on the sides of the pharynx, and an almost solid mass occupied the depression between the anterior and posterior pillars of the pharynx. There were a few on the base and sides of the tongue.

The diagnosis of leptothritic pharyngeal mycosis, as

designated by Ruault, of Paris, was made, and subsequent resistance to all local measures confirmed the opinion.

The treatment was as follows: The excrescences were scraped off from the mucous membrane with a moderately sharp curet, and a strong solution of subsulfate of iron was applied. While this completely removed them, in two days the growth was as thick as before. Curetting was continued and different applications made every few days for several weeks, with no beneficial results. The condition was improved more noticeably under the use of sodium bicarbonate dusted over the areas. The improvement was, however, but transitory.

The patient refused to allow the use of the electric curet, knife, or strong escharotics, so that active measures were suspended.

As the remedial agents afforded by the materia medica had been exhausted, it is to be regretted that the woman would not consent to be a subject for further experimentation, and allow a test of surgical means. Dr. Dembicki's successful treatment with tobacco-smoke was not tried.

I believe that the electric curet, conscientiously used, and followed by the application of some astringent, would have effected a cure.

The case is reported because of its infrequency and lack of information as regards efficacious treatment.

162 ST. JOHN'S PLACE.

MEDICAL PROGRESS.

Symmetrical Gangrene of the Feet in a Child.—POWER (*Lancet*, No. 3648, p. 249) has reported the case of a girl, four years and eight months old, but looking much younger, who presented gangrene of both feet. Two winters before she had been greatly troubled with chilblains on both feet. A year later she was treated for wasting and swelling of the feet and legs as high as the knees. The feet and legs were said to become livid in the evening, and to be of natural color during the day. The child had never walked or crawled, but there was no paralysis of the legs, and the want of power seemed to depend upon simple weakness. She had been fed from birth on artificial milk, and had had an attack of measles at the age of eight months. There were no indications of syphilis. The little patient was pale-faced, dark-haired, and thin. The pulse was 144, regular, and of high tension. The radial arteries were tortuous, thickened, and readily felt. Pulsation could be felt in the dorsalis pedis artery of each foot and in both posterior tibial arteries. The skin appeared natural; the nails were cracked transversely, and the finger-tips beneath the nails were livid. Nothing abnormal could be detected in heart or lungs. The eyes were normal; there were no retinal hemorrhages. All of the toes on both feet were shrivelled and black, the gangrene extending as high as the metatarsophalangeal joints. On the inner side of the left heel was a small patch of black skin, about half an inch in diameter, and at a corresponding point on the inner side of the right heel the skin appeared to be redder than natural. A generous diet was prescribed, with half an ounce of brandy every twenty-four hours. Small doses of tincture of opium and aromatic spirit of ammonia were given frequently.

In the course of a few days a line of demarcation began to form along each series of metacarpophalangeal joints. The slough on the left heel had separated, leaving a small superficial ulcer, whilst the red patch on the right heel had completely disappeared. A little later the phalanges of the little toe of the left foot had completely separated, and at a somewhat later date the remaining phalanges on both feet were removed. The patient thereafter made an uninterruptedly good recovery, except for the appearance of a small black spot at about the junction of the upper with the middle third of the anterior aspect of the right tibia. The child was again ordered one-minim doses of tincture of opium, and the spot disappeared in the course of a few days. The urine, which was repeatedly examined, was usually neutral, or feebly alkaline, and it was at all times free from sugar, blood, and hemoglobin. On one occasion, at a late date, it was acid and contained a faint trace of albumin.

The Diagnostic Significance of the Gonococcus.—NEISSER (*Deutsche medicin. Wochenschrift*, 1893, Nos. 29, 30) contends that there can be no doubt that the gonococcus is the cause of gonorrhea. The diagnosis of gonorrhea, in the male or in the female, can in many cases be made from the symptoms alone; but in a large number, particularly in cases of chronic course and attended with mild subjective and objective manifestations, the diagnosis will depend upon a demonstration of the presence of gonococci. Examination for gonococci is indispensable in cases in which a question arises as to the infectiousness of the discharge. As the therapeutic procedures to be adopted will depend upon the presence or absence of gonococci, the examination for the organisms is to be made not only before, but also during the whole course of treatment. In most cases a microscopic examination will suffice; on account of the imperfection of cultural methods, these will be employed only in exceptional instances. If gonococci be found, there can be no doubt of the diagnosis. Observations that yield negative results are not to be accepted as conclusive, as gonococci may be concealed in lacunæ or invaginations of the mucous membrane, or may be present in numbers so small as to escape detection. In such a case repeated examination, as well as cultural observations, will be necessary. The clinical manifestations will have to be studied in connection with the microscopic findings. If gonorrhea be found in a married person, both husband and wife should be placed under observation, and if necessary both should be subjected to treatment.

Immunization of the Fetus by the Vaccination or Variolization of the Mother.—At a recent meeting of the Paris Academy of Medicine, HERVIEUX reported the outcome of a study of the influence upon the fetus of revaccination of the mother. Of 152 cases in which the mothers were revaccinated during the last months of pregnancy and in which the infants were vaccinated soon after birth, in only 46 did the vaccination of the children fail. Experimental observations seem to indicate in a general way that immunization of the mother is only exceptionally transmitted to the offspring. Thus, 500 sheep were inoculated with vaccine virus and their offspring were also inoculated soon after birth, with positive results in

all but 35. In several cases an attack of variola in a pregnant woman did not render her offspring insusceptible to vaccination shortly after birth. In some instances, however, the infant for several months proved refractory. Recent investigation has shown that microorganisms may pass from the maternal to the placental circulation if there be an erosion of the placenta.

Diminution of the Electric Resistance in Cases of Traumatic Neurosis.—MANN (*Berliner klin. Wochenschr.*, 1893, No. 31, p. 749) has found that in cases of traumatic neurosis attended with cerebral manifestations (headache, vertigo, tinnitus) there is frequently a diminution of the resistance ordinarily offered to the passage of a galvanic current through the head. Such a diminution had previously been found to exist in cases of cerebral hyperemia, and it is believed that it is also this condition upon which the alteration of the resistance depends in cases of traumatic neurosis. The practical value of this knowledge resides in the fact that it may be of diagnostic significance in cases of traumatic neurosis in determining whether or not complaint of cerebral symptoms has an objective basis. A negative result, however, cannot be considered as excluding traumatic neurosis.

THERAPEUTIC NOTES.

The Physiologic and Therapeutic Activity of the Hot Bath.—At the recent German Congress for Internal Medicine, BAELZ (*Wiener medicin. Presse*, 1893, No. 34, p. 439) pointed out the utility of the hot bath, the lowest thermometric limit for which should be placed at 104° F. The warmer the bath, the more important is it first to wet the head with hot water, in order to relax the cerebral vessels, so that, when subsequently the cutaneous vessels become filled with blood, there shall be no danger of cerebral anemia. The duration of the bath may be from five to twenty minutes; it should cease as soon as a sense of heat or palpitation of the heart is felt. Upon entering the bath, goose-flesh, contraction and pallor of the skin appear for a few seconds, to be gradually followed by relaxation and redness. The pulse, at first transiently slowed, gradually becomes quickened; the arteries become relaxed and the temporals appear tortuous. The pulse-wave is full, the curve high. The temperature, taken beneath the tongue, rises 3.6° or more. This elevation takes place not only in consequence of accumulation of heat, but also as a direct result of the absorption of heat. After leaving the bath the temperature usually rises rapidly from 0.2 to 0.4° additionally, to reach the normal again in from half an hour to two hours. On leaving the bath a sense of refreshment is felt and a copious perspiration breaks out. A gentle douche of cold water is agreeable. There is no danger of "catching cold"; on the contrary this danger is obviated by the hot bath, in consequence of the paresis of the cutaneous vessels from the effects of the heat, experiments and sphygmographic tracings having shown that for some time after the hot bath reaction of the vessels to cold is wanting. This is not the case if the temperature of the water has been at body-heat or lower. The prejudice that the hot bath is debilitating in any way is entirely unfounded; on the contrary two or

three hot baths a day are exceedingly useful in mountain-journeymen. Investigation has shown that, in contradiction of former belief, albuminous metabolism is not increased in the hot bath. The hot bath is therapeutically applicable not only in cases of nephritis, but also in cases of capillary bronchitis and broncho-pneumonia, especially in children. Its efficacy here depends upon the diversion of the blood from the pulmonary circulation to the cutaneous vessels. The temperature of the bath should be from 104° to 109.4° F.; its duration from five to fifteen minutes, the patient being removed as soon as the skin becomes reddened. If the body-temperature is high a half-bath may suffice; pyrexia is, however, not a contra-indication for the bath. Sprinkling the head or chest with cold water is to be recommended to stimulate deep inspiration. After the bath perspiration occurs; respiration is easier; the pulse better; and, as a rule, calm sleep follows. The hot bath also acts admirably in the treatment of rheumatism and of menstrual colic. Organic disease of the nervous system, particularly posterior spinal sclerosis, and atheroma of the bloodvessels, are contra-indications to the use of the hot bath, which must further be used with great circumspection in case of organic disease of the heart.

Venesection for Eclampsia Gravidarum.—KIRK (*Lancet*, No. 3648, p. 247) has reported the case of a woman who, in the eighth month of her first pregnancy, was seized with violent headache followed in two hours by general convulsions. Other convulsions occurred, loss of consciousness persisting in the intervals. Following a violent attack, a bleeding of 16 ounces was practised. Six ounces of pale urine were withdrawn from the bladder and found to be markedly albuminous. There was no anasarca and the ankles did not pit on pressure. Labor had not yet begun. After the bleeding the fits became shorter, though continuing with unabated frequency. Finally, however, labor set in and delivery was accomplished by means of the forceps. The child was stillborn. The woman made a good recovery. In a second case, in a woman in the ninth month of her first pregnancy, headache and vomiting were followed by convulsions. After a severe seizure a bleeding of 24 ounces was practised. In this case there was also no anasarca or pitting of the ankles. Some urine withdrawn by the catheter was markedly albuminous. Labor was progressing, the os being partially dilated. Four convulsions occurred within an hour, and upon their cessation the forceps was applied and a living child delivered. Six hours after delivery the convulsions recurred with their previous intensity, but finally ceased after four attacks within an hour. Recovery was thereafter uninterrupted. In both cases the blood-serum was examined for uric acid, but none was found.

A Depilatory.—

R.—Iodi pur. gr. xij.
 Olei terebinthinæ ℥.xx.
 Olei ricini f 3ss.
 Alcohol f 3ijss.
 Collodii f 3j.—M.

S.—Apply with a brush once daily for three or four days successively. Upon the removal of the layer of collodion the hairs will be found also to come away.

BUTTE, *Pharm. Post; Wien. med. Bl.*, No. 32.

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AUTOPATHOGRAPHY.

VON ZIEMSEN'S *Handbuch der Allgemeinen Therapie* contains a noteworthy article by OERTEL on the Therapeutics of Disturbances of the Circulation, etc., in which with great clearness and minuteness there are described the symptoms of a certain person afflicted with the disease-complications set forth by the learned author. It is an open secret that OERTEL'S patient was himself. And how often have such illustrations of autopathography occurred! SYDENHAM said of gout that "more wise men than fools are victims of the disease," and in writing of the physical disease his eye was also turned upon himself. THOMSEN'S disease was described by a sufferer in whose family the affection existed for five generations, and if we do not err, SALTER, whose book on asthma is, perhaps, the best monograph on the subject written in England, spoke from much personal experience with the disease. Hay-asthma was first accurately described by an English physician, BOSTOCK, in a report of "a case of a periodical affection of the eyes and chest," before the Medico-Chirurgical Society of London, in 1819. The "case" was himself. The sad illustration of LAENEC is well known. His name is naturally associated in the same breath with pulmonary tuberculosis, of which he died at 45, from his epoch-making

work, the affection having been discovered by his own methods and instrument—auscultation and the stethoscope.

Angina pectoris was described by HEBERDEN in 1768. It is said that an unknown correspondent gave HEBERDEN a description of his case and bequeathed his body for examination after death. JOHN HUNTER made the examination and was himself a great sufferer from the disease, and died in a paroxysm of it. Others have had scientific curiosity aroused as regards this terrible disease by their own anguish. THE MEDICAL NEWS of March 26, 1892, contains an article on the subject, by one who suffered while he wrote and who died a year thereafter of organic heart-disease and angina.

The medical historian could multiply such sad instances many times. In literature hundreds of famous books are illustrations of the interest aroused in mental and social suffering by the bitter private experience of the writers with the ailments they set forth with a vividness and accuracy that naught else but personal realization could give. Perhaps all great writers have been great, and have so surely sent their words home to the hearts of their fellows only because the steel of pain had first penetrated their own souls. DANTE, it was well said, had been in hell before describing it, and DEQUINCEY, LEOPARDI, and HEINE spoke so convincingly because they spoke of what they knew by bitter experience.

But it is not only in writing that one's own pain may give him exactness and interest; it is also of greater use in teaching the physician to have that sympathy and accuracy of perception with the disease of his patient that shall lead him to treat disease there just as if it were in his own person. It is an often-noticed fact that opticians and oculists have been impelled to their specialty by their own personal ocular history—"they all wear spectacles"—but it is true, though less recognized, that the optician who has suffered from ill-made or ill-adjusted lenses is certain to do better work for his customer, and the ophthalmologist who has carefully studied his own optic defects will the more readily detect those of his patients.

Herein also lies the wisdom and propriety of women studying medicine, as all women-physicians so keenly recognize. When women rise to their opportunity there will be splendid examples of medical training and success in their ranks, because in treating the diseases of those of their own sex and of children we must expect great things of them.

In little things or in great the rule holds good ; it is personal experience that makes the eye clearer to detect elsewhere what one has himself endured, and that innervates the emotions to cure in others what has been felt as so grievous in self. There are, therefore, numerous reasons why physicians should not neglect the intimations and the lessons derivable from personal illness. It was a myth of old-time folk-lore that pearls and diamonds were the crystallized tears of the child of Life cruelly whipped by the step-mother, Experience.

THE ETIOLOGY OF CHRONIC ARTICULAR RHEUMATISM.

It has long been a matter of doubt as to whether or not any etiologic relation exists between the three groups of affections that are ordinarily designated acute, subacute, and chronic rheumatism, with a disposition to decide the question in the negative. Of the three, acute rheumatism is the only one at all well defined, from the standpoints of symptomatology, morbid anatomy, and therapeutics. Into the other two groups are usually cast all of the vague and uncertain painful conditions affecting musculo-fibrous and fibro-articular structures. The confusion attending the classification of these is eloquently indicated by the absence of a distinctive semeiology, by the want of a definite pathology, and by the lack of a distinctive therapy. There have even not been wanting observers that were willing to include some of the cases of chronic articular rheumatism among the tropho-neuroses, dependent upon changes in the spinal cord.

Little light has been thrown upon this obscure subject, but a recent communication by SCHÜLLER (*Medical Record*, 1893, vol. xlv, No. 13, p. 389) would seem to point the way for further investigation in at least one direction. This observer has made a clinical, anatomic, and bacteriologic study, embracing 116 cases of so-called rheumatic articular inflammations. In these he found hyperplastic inflammatory changes in the synovial membranes of the affected joints, and from the tissues and fluids of which he was able to isolate a peculiar bacillus, to which he ascribes etiologic influence. He was further able to transmit this organism to lower animals, inducing lesions in these comparable to those observed in man, and again to obtain from the lesions the specific bacilli. The organisms are described as being from 2.24 to 2.76 μ

long, and from 0.75 to 0.95 μ wide ; usually straight, though sometimes slightly curved or angular ; presenting bright granules at either pole ; staining readily with carbol-fuchsin ; and decolorizing with acids, etc. In culture they grow best in the dark, at a little above ordinary temperature, forming opaque-white colonies that slowly liquefy gelatin.

These observations are not to be accepted as final, as the investigation has not been entirely completed. There is, however, no *a priori* ground on which to reject the conclusion to which they lead. On the contrary, there is growing evidence that acute rheumatism is of microbic origin (see *THE MEDICAL NEWS*, August 26, 1893, p. 247), and it is not too much to hope that before long we shall know more than we do concerning so-called sub-acute and chronic rheumatism, which, as has long been believed, are not at all rheumatic in nature.

Bacteriologic science has met with inevitable, and not unhealthy, antagonism, with the result of stimulating better work, with more reliable and more permanent results. As a consequence, it is likely that fewer mistakes will be made, and less hasty conclusions reached, than has been the case in the past, and we can look forward to the future of bacteriology with growing hope and confidence.

THE TREATMENT OF EXUDATIVE TUBERCULOUS PERITONITIS BY MEANS OF INTRA-PERITONEAL INJECTIONS OF STERILIZED AIR.

ALTHOUGH an adequate explanation of the sequence of events may be wanting, the now well-known clinical fact remains that in some cases of tuberculous peritonitis abdominal section is followed by a disappearance of the preëxistent symptoms. Many theories have been proposed to account for such an unanticipated occurrence, but none yet brought forward is entirely satisfactory. At one time it was believed that the antiseptic fluids used in irrigating the diseased peritoneal cavity were responsible for the fortunate result, but it was subsequently found that the outcome was the same when sterilized distilled water was employed, or even if the peritoneal accumulation was simply evacuated and no irrigation at all practised. Some authorities ascribed the result to the influence of light upon the disease-process ; while others suggested exposure to the air as the cause ; and yet others made the necessary operative manipulations responsible. From a number of

considerations, NOLEN (*Berliner klinische Wochenschrift*, 1893, No. 34, p. 813) comes to the conclusion that the improvement must be due either to the changes in the circulatory conditions brought about as a result of the evacuation of the fluid accumulation, or to the contact of the air, in a chemic, physical, and bacteriologic sense. The first explanation is at once invalidated by the fact that recovery does not follow evacuation of the fluid by puncture. Now, it was reasoned that if the good result depended upon exposure of the diseased peritoneum to the air, that end could be attained by the injection of sterilized air into the peritoneal cavity through the puncture-opening necessarily made for the evacuation of the ascitic fluid. As the innocuousness of this procedure had already been demonstrated, it only remained to practise it in a suitable case. In three cases so treated the results fully confirmed every anticipation. In none did the ascites recur after a single injection of air. In two, permanent recovery ensued; the conditions in the third rendered such a result out of the question. The apparatus employed in the manipulations is extremely simple. After the fluid has been evacuated by siphonage, the air contained in a glass jar is expelled by means of hydrostatic pressure, and passed through sterilized cotton, and then through warm sterilized distilled water, and finally, by means of a rubber tube and the puncture-needle, into the peritoneal cavity. The insufflation is made gradually, the abdomen meanwhile being gently kneaded. It should cease when the abdomen commences to become tense. The air is aspirated by reversing the process, the removal of the hydrostatic pressure establishing a current in the reverse direction. No harm will result if a small quantity be permitted to remain. The operation has proved quite painless, and no unpleasant sequelæ have been observed. Some degree of meteorism persists for a day or two days afterward.

EDITORIAL COMMENTS.

Admissibility of Expert Testimony Not Based on Personal Experience.—Although it might not be admissible merely to repeat what a witness had read in a book not itself admissible, still, when one who is competent on the general subject accepts from his reading as probably true a matter of detail which he has not verified, the fact gains an authority which it would not have had from the printed page alone, and subject, perhaps, to the exercise of some discretion, may be admitted. So holds the Supreme Judicial Court of Massachusetts

in the case of *Finnegan v. Fall River Gas Works Co.* (34 N. E. Rep., 523). This was an action against a gas company to recover for the death, by inhaling gas, of an employé of a city water board while in the gas company's cellar for the purpose of reading the water meter, pursuant to his duties. One of the doctors summoned as witnesses in the case testified that the deceased had a period of conscious suffering before death. To be sure, he had not had any experience of this kind of asphyxiation personally or with patients, but his general competency as an expert seems not to have been questioned. Therefore the court declared itself as recited, and said that it could see no sufficient ground for saying that the testimony admitted in the case could be treated as furnishing no evidence of the fact.

The Mineral-water Cooperative Business.—What fortunate men are physicians! All they have to do to make any amount of money—as it seems—is to enter into secret partnership with “enterprising hustlers,” who will do all the work except a paltry word of advice to patients, and turn over to the physician most handsome profits. In so doing a man is not selling his professional honor, because the treatment advised is good! This is an extract from a “confidential” (the word slips with a wink and tells the story!) letter to many physicians:

DEAR DOCTOR: I offer you a coöperative interest in — Water, in the form of tribute to the amount of one dollar per dozen one-half gallons, when the prescriptions come to me direct, and half that sum when the business reaches me through druggists, providing you furnish me each week with the names of patients to whom you have prescribed — Water, so that they may be credited to your account.

It is apparent from the above, that in this item a physician may find an income equivalent to interest at 6 per cent. on a real estate investment of thirty thousand dollars (\$30,000), as — Water may easily and properly be prescribed to one hundred families, who on the average may consume one and a half dozen per month.

100 at \$18.00 = } \$1800.00.
\$30,000 at 6 per cent. = }

If you are favorable to this proposal, etc., etc.

Watch the Slaughter-houses.—The *Sanitary Inspector* says that one way in which filthy slaughter-houses are probably detrimental to health is this: Fresh meat is very absorbent of foul odors and is quickly tainted in an atmosphere laden with the germs and stench of putrefaction. Tainted meat often gives rise to dangerous and sometimes fatal poisoning among those who have eaten such food. The whole idea is revolting—eating meat that has been dressed, and perhaps left to cool from six to twenty-four hours in a building which an ordinary person can hardly enter without suspended respiration and gastric insurrection.

So great an evil had these small and unkempt slaughter-houses become in England that a society was formed a few years ago whose object is to call the attention of the public to their dangers and to secure improvements in the arrangement and care of such places. The society, under the presidency of the well-known sanitarian, Dr. B. W. Richardson, has been doing good work in that country, and it would seem that some such effort is needed in this country, where the people are often too forbearing.

Appendicitis in the Negro.—From the correspondence presented in the present issue of THE MEDICAL NEWS it will probably be concluded, that while appendicitis is less frequent and less severe in the black man, he is by no means free from the disease. We have received a number of other communications upon the subject. Dr. E. R. Conson, of Savannah, Ga., writes that he has seen cases of appendicitis in the negro, but that they seem to be less frequent than in whites. He has noticed no difference in size or structure of the appendix vermiformis. Dr. James A. Turner, of Little's Mills, N. C., has seen and treated two cases in the last five years: one recovered without surgical aid, the other recovered after operation. Dr. Charles J. Aldrich, of Cleveland, Ohio, has had three cases, all of which recovered without operation. Besides these cases, Dr. Aldrich made an autopsy of a case in 1882 that was diagnosed as one of appendicitis, but death was proved to be due to the fact that twelve inches of the ileum had passed through the ileo-cecal valve, whence resulted general peritonitis. We think the discussion may be closed.

Thyroid Therapy for Psoriasis.—Struck by the remarkable improvement observed in the condition of the skin in cases of myxedema treated by the administration of thyroid extract, Dr. Byron Bramwell, of Edinburgh, was led to try the same agent in the treatment of some chronic and obstinate cases of psoriasis, with results that were at once surprising and gratifying, as detailed at the recent meeting of the British Medical Association. A preparation of thyroid gland was the only medicament given, so that the possibility of doubt was practically eliminated. In some cases the subjective improvement was immediate, and was soon followed by objective evidence of improvement. The inflammatory redness of the diseased areas diminished, and there was considerable desquamation. One patient was made worse; in two the treatment was followed by no benefit; and in one case a slight relapse took place. The question at once suggests itself that if this method of treatment prove ultimately successful in psoriasis, why should it not be applicable to other diseases of the skin as well.

Should Doctors Charge Dentists? is a question the medical journals are trying to decide. The boot might be wisely put on the other foot: Should dentists charge doctors? If a dentist is a graduate physician, the "courtesies of the profession" should certainly be accorded each other by both physician and dentist—at least so far as service and advice. Why not just the same if he is not an M.D.? However, it wouldn't be advisable, as has been seriously suggested, to attempt making the doctors' drugs offset the dentists' gold plates and gold fillings. Hardly!

Figure-heads in the Programs of Medical Congresses.—Complaints are multiplying of the reprehensible practice of announcing as contributors to a proposed medical congress all or many of the great names that it would be desirable to have read papers, regardless of the fact that such persons have not proposed to do so, have not accepted invitations, or have even positively declined to contribute. It may show "enterprise," but "enterprise" is often a euphemism for very contemptible practices.

A Little Kindness Desired.—It has come to the knowledge of the Editor of THE MEDICAL NEWS that by reason of old age, illness, etc., a worthy physician is in want. He is struggling bravely against unmerited misfortune and, if he knew of it, would by no means allow such an appeal as this to be made for him. A little financial aid for a worthy member of our guild is needed, and we should be happy to make him happy by the transfer to him of the gifts of his unknown friends.

SELECTIONS.

FANTASTIC THERAPEUTICS.

THE fantastic character of recent therapeutic suggestions will, it is feared, cause a revulsion of feeling in favor of therapeutic nihilism. The science of therapeutics is particularly subject to the fluctuations imposed upon it by the idealism of its votaries. But, as Sir Thomas Browne somewhere observes, "every poison contains its own antidote," and the excesses practised by the insistent therapist engender a corresponding skepticism and mistrust, which ultimately save this much-abused science from the oblivion of ridiculousness.

These two traits, this confidence of the believer and the incredulity of the doubter, are admirably exemplified at the present time. On the one hand, it is found that the ideas which have resulted in the concoction of microbic and animal-extract panaceas for every ailment have devastated the reason of the therapist. The very reasonable hypothesis that the various glands supply an internal secretion to the blood necessary to its maintenance as a vitalizing medium has been twisted into the baseless fabric of a vision of every organ secreting or manufacturing specific nutritional substances. In harmony with this conception, a system of therapeutics is suggested which smacks of sixteenth century enlightenment; in which extracts of various organs are administered for diseases of homologous parts. On the other hand, we find a distinguished German observer carrying his nihilism to the extreme of contending that all the results of electro-therapeutics are those of suggestion. Between so much faith and so little, where do we stand? Shall we next hear that opium relieves pain and chloroform produces anesthesia by suggestion? or shall we learn that zygomaticin is extremely beneficial in melancholia?

One of the potent causes of this therapeutic befuddlement doubtless arises from the proprietary interest in remedies. The profession is perpetually deluded by those who claim to enlighten it by carefully prepared information of an unreliable kind, regarding the physiologic and clinical action of remedies. This makes it more and more incumbent upon the intelligent physician to limit his prescriptions to the actual materia medica, of which he possesses definite and reliable information.

It would be sad to think that nothing should result from this outrageous idealism in therapeutics. If it be that "the end of dreams is to break them," let them be broken rudely, provided this restore us to a fair degree of therapeutic sanity.—*The Physician and Surgeon*, August, 1893.

THE COMPOSITION OF QUACK-REMEDIES.

SIGNS are not wanting that the common-sense of a long-cozened British public is beginning to assert itself in the matter of quacks and their practices. For some time past a plucky little paper—*Hygiene*—has been publishing a series of articles with analyses of many popular patent medicines. It is astonishing to note the number of remedies which depend on the homely virtues of aloes, eked out by equally commonplace properties of such substances as treacle, hard soap, and powdered ginger. We may hope that the good seed of knowledge thus sown broadcast by that courageous editor will fructify to some future purpose in the minds of the community. One clear contributory force in the revolution will be the rousing of Englishmen to the way these charlatans have picked their pockets. The trial of the woman Ruppert a week or two since in the Irish courts showed that the poisonous nostrum she vended at half a guinea had a commercial value of about a halfpenny. The disclosure of the latter fact will probably deal a heavier blow at the pernicious system of patent and proprietary medicines than many years of journalistic agitation would be able to effect. Another hopeful sign is that the newspapers generally are beginning to seek for more light on this important subject. It is true that the leading papers, with some few honorable exceptions, have not yet had the courage to exclude the advertisements of proprietary articles, even when proved worthless in open court.—*Medical Press and Circular*, August 30, 1893.

REVIEWS.

BRAIN-SURGERY. By M. ALLEN STARR, M.D., Ph.D., Professor of Diseases of the Mind and Nervous System, Medical Department of Columbia College, N. Y., etc. With fifty-nine illustrations. Pp. 295. New York: William Wood & Co., 1893.

THIS is the first distinctively American monograph on this fascinating subject, and pleases the reader not alone on account of its title, but because of the personality of its author. The translated monograph of Bergmann has until recently been the principal source to which students of this subject have referred. It is, however, not so comprehensive nor so suggestive as the one in hand, and it by no means does justice to the work of the American neurologists and surgeons, whereas this work of Dr. Starr is in large measure devoted to the labors of his *confrères* in this field. That he has been a careful student of the subject goes without saying, and that there is very little accessible literature on the subject which has not been referred to will appear from an examination of its pages. A large portion of the book is devoted to trephining for epilepsy and kindred disorders, to which about 130 pages are devoted. The author has studied the matter carefully, and apparently impartially, in the light of the experience of the last few years, and if not enthusiastic in favor of surgery in this condition, justifies this later by comparison of the results which he reports. We are pleased to see him emphasize, on page 27, the fact that when both medical and surgical indications for operation exist, but do not coincide, it is better to follow the medical indication, *i. e.*, it is better to trust to localizing

symptoms than to the presence of scars or even depressions over portions of the cortex whose function is not known.

In the section devoted to the pathologic changes observed during operation he has been quite full, and as satisfactory, perhaps, as the subject permits. In speaking of the later results of excision of portions of the brain he quotes Coen, who says: "Should reproduction of brain-tissue fail to occur in the region where brain is destroyed, a connective tissue fills its place which forms a scar in the true sense of the word." In summing up results he acknowledges that in the majority of operated cases there has been a failure to permanently cure by operative interference. When we ask why, the answer must be that the original condition which gave rise to the effect has not been removed. While it is possible to elevate a depressed bone, to remove cysts, and take away the connective tissue, it is useless to simply break up adhesions, because they will always re-form. In this regard he seems to have taken no notice of the recent suggestion to insert gold foil between the dura and the cortex to prevent this very thing. He fears that excision of any portion will always be followed by the formation of a cicatrix, which in turn will act as an irritant. He does not argue that we should, therefore, be deterred from operating, but says, judging from general results which are unfavorable, that we should be inclined not to operate, but must take into consideration that in no case is it possible to predetermine just what or how beneficial the results of an operation may be. Some patients have undoubtedly been cured. It is here, we feel, that he has made an important omission in not referring to the necessity for a long-continued dietetic, hygienic, and drug treatment of these cases after operation, and he nowhere lays stress upon the so-called epileptic habit into which these patients have fallen, and which must be cured by these measures rather than by operation alone. Altogether he favors operation for selected cases.

With trephining or craniotomy for imbecility he deals very fairly, although not quite as fully as he might have done. For instance, he does not state the minimum circumference of the skull which makes a case hopeless for operation. This limit has been fixed by French authority at seventeen inches. And we look in vain through his pages for a description of that condition commonly spoken of as too early synostosis, due usually to rickets, which leaves a fairly normal brain in a condition in which expansion is impossible.

An interesting chapter is devoted to trephining for intra-cranial hemorrhage, which must for the most part be confined to traumatic cases, although success has followed the operation in cases of apoplexy of or near the cortex.

Of abscess of the brain and its operative relief he speaks at some length, and he gives a very compact summary of the symptoms due to abscess following ear-disease, with such directions as are necessary for the operator. Over fifty pages are devoted to the subject of brain tumors, including their symptomatology, with detailed reports of cases of his own. He advises, when brain-tumor is suspected or diagnosed, if mercury and potassium iodid fail to relieve the patient within three months, or if during that time the symptoms rapidly increase, that operation should not be delayed. In

dealing with cysts he emphasizes the wisdom of removal of the cyst-wall, as otherwise it would probably refill and require further operation.

Due attention is devoted to trephining for hydrocephalus and for relief of intra-cranial pressure, and he appears to rather favor than discourage this operation. For insanity and headache, persistent and severe, the operation is occasionally to be recommended, but it is almost impossible as yet to formulate explicit rules; each case should and must be studied on its merits.

The final chapter is devoted to the operation itself, which is succinctly described and treated at sufficient length. This is, so far as we know, the first attempt by a neurologist to write a surgical treatise, and it has proved a success. In these cases, as well as in many others, the surgeon and neurologist must work hand-in-hand, and it is a pleasure to find a specialist in internal medicine who is quick to perceive the indications for operation, and so competent to judge of what ought to be done, and how. We congratulate the author very warmly upon his excellent work.

A CONTRIBUTION TO THE PATHOLOGY OF THE VERMIFORM APPENDIX. By T. N. KELYNACK, M.D. London: H. K. Lewis, 1893.

THIS volume embodies the results of the writer's evidently careful and extended personal observations upon the pathology of the vermiform appendix, as well as much useful information on the subject culled from the writings and reports of others.

There is probably no subject that has attracted more attention of late years, both from the medical and surgical standpoint, than that of disease of the appendix, and a systematic consideration of its pathology, especially by one who has had the opportunities for observation that Dr. Kelynack has, is a timely and welcome contribution to literature.

After discussing the development and physiology of the appendix, as well as the early references to appendicitis, the variations met with in the length and lumen of the appendix are taken up, and then follows a most interesting chapter on the pericecal peritoneal fossa. Then in order follow chapters on variations in position, herniæ of the appendix, the histology, cystic dilatation of the appendix, and next its inflammatory affections are taken up. The writer makes some good criticisms on the complicated and uncertain terminology of affections of the cecum and appendix. In classifying the forms of appendicitis he adopts a very simple grouping, making three divisions: 1. Simple Appendicitis; 2. Perforative Appendicitis; and 3. Recurrent Appendicitis. The specific forms—tuberculous, typhoid, and actinomycotic appendicitis—are considered separately.

Upon the question of treatment, Dr. Kelynack's views, based as they are upon such extended observation, seem to us most fair and temperate. As he happily suggests, there is considerable difference of opinion between physicians and surgeons as to treatment in many instances, and the reason for this is obviously, as he points out, the fact that the medical men are likely to base their judgment upon the mild cases, which come under their care, and which recover with medical treatment, while the surgeons' experience is derived from the more severe

cases, in which the occurrence of suppuration, or of peritoneal infection, demands operative interference. As the writer says: "Since the adoption of surgical measures may be demanded in what even seems to be a mild form of appendicitis, it is most desirable, if we are to live up to our knowledge of pathologic facts, that there should be free and early coöperation of physician and surgeon."

This book is one which will well repay reading; it contains much that concerns the general practitioner as well as the pathologist or the surgeon. The bibliography, with which the volume concludes, and the extensiveness of which will doubtless surprise not a few readers, will be appreciated by those who have occasion to write upon, or to investigate the literature of, disease of the appendix.

ABNORMAL MAN. (BUREAU OF EDUCATION, CIRCULAR No. 4, 1893.) Being Essays on Education and Crime, and related subjects, with Digests of Literature and a Bibliography. By ARTHUR MACDONALD, Specialist in the Bureau of Education. 8vo, pp. 445. Washington: Government Printing Office, 1893.

THIS report, just issued by the Government, is very valuable as containing the latest statistics and literature in the comparatively new science of criminology.

The author leaves aside all theorizing and devotes himself entirely to the arrangement of investigations and reviews of the latest writings, summarizing them so that the reader can familiarize himself with the best thoughts of the now famous criminal anthropologists of the Italian and French schools. He believes that "to experimental medicine scientific ethics will look for many of its basal facts."

The pathology of society must be studied experimentally, as the pathology of man is studied. Criminal anthropology is very closely connected with psychologic medicine; and one experienced prison-warden believes that the prisons of the future will be in charge of physicians.

Social diseases are intimately connected with physical disease, and the medical man is becoming more and more a factor in the efforts made to cure and prevent them.

To those who are connected with institutions for the defective and criminal classes this report is very essential, containing, as it does, an extensive bibliography of crime, alcoholism and allied habits, insanity, pauperism, and social pathology.

The most important contributions of the past few years are reviewed and a synopsis is given. Criminology, alcoholism, criminal and hypnotic suggestion, insanity and genius, and charitologic and ethical literature are some of the subjects treated in detail.

Just as pestilence and insanity are no longer considered visitations of an angry Divinity, so are crime and pauperism being slowly shifted away from the ideas of inherent depravity and original sin, and are considered diseases for whose existence society is chiefly to blame.

Expiatory punishment is no longer looked upon as the proper treatment.

Prophylaxis is the cry of the modern criminologist, and an asylum for chronic cases one of the methods of carrying it out.

Mr. MacDonald's report should be read by every physician, for his opinion may be sought any day in the discharge of his various duties.

NURSING: ITS PRINCIPLES AND PRACTICE, FOR HOSPITAL AND PRIVATE USE. By ISABEL ADAMS HAMPTON, Graduate of the New York Training School for Nurses, attached to Bellevue Hospital; Superintendent of Nurses and Principal of the Training School for Nurses, Johns Hopkins Hospital, Baltimore, Md.; late Superintendent of Nurses, Illinois Training School for Nurses, Chicago, Ill. Illustrated. Philadelphia: W. B. Saunders. 1893.

THIS latest nursing-book is well written and very readable, the best parts being those on "Observation of Symptoms" and "Obstetrics."

The remarks on page 58: "An intimate friendship between the head nurse and pupil nurse ought never to exist, if only for the sake of the patients;" and on page 342: "A well-trained nurse is never guilty of attempting a diagnosis of a disease even when invited to do so;" and those on economy on page 65 will, we hope, commend themselves to all.

The first chapter is not, we think, likely to be followed by any training school-head, unless it be one of the author's pupils, each one having her own preferred plan.

In Chapter II, the important duty of cleansing sputacups is given to an orderly, and yet in Chapter IX special precautions are written as to their disinfection from a bacteriologic standpoint.

We cannot agree with the statement on page 55: "Hospital etiquette consists of nothing more than the continual and systematic observance of *every-day* courtesies"—a hospital having a code of its own, like to no other we know of.

The knowledge is distributed somewhat unevenly, nine pages being given to temperature, while two cover croupous pneumonia and one and a half smallpox.

Take it as a whole, the book is a valuable addition to a nurse's library. An excellent glossary is a commendable addition to the work.

The spelling is as rigidly medieval as possible, although at least one opportunity was missed—*perineum* is not spelled *perinaum*. The author, of course, spells *feces, faces*, but why not logically also *defecation, defecation*. In the index *Trommer* is repeatedly spelled *Trommer*, and throughout the book *albumen* is written instead of *albumin*.

HEATH'S PRACTICAL ANATOMY: A MANUAL OF DISSECTIONS. Edited by WILLIAM ANDERSON, F.R.C.S., Surgeon and Lecturer on Anatomy at St. Thomas' Hospital; Professor of Anatomy at the Royal Academy of Arts; Examiner in Anatomy for the Royal College of Physicians and Surgeons. Eighth edition, 329 illustrations. 8vo, pp. xviii, 744. Philadelphia: P. Blakiston, Son & Co.

THOSE familiar with text-books upon practical anatomy in general, and with Heath's *Practical Anatomy* in particular, will welcome the eighth edition in its new and reconstructed form. This edition has been subjected to an extensive revision in order to bring it to a level with current teaching and the present requirements of the examination boards.

The original plan of the work has been carefully preserved, but the more recent progress in topographic anatomy, involving, as it does, a greatly increased precision in description, especially in connection with the viscera, has necessitated an almost complete reconstruction of certain sections, and the addition of new matter to the extent of 150 pages, without increasing materially the bulk of the book.

The work of the editor is everywhere visible, without the unsightly and objectionable letter "E," so common in revisions. The reconstruction has been complete, and stamps the distinguished editor as in every way the equal of the celebrated author of this popular work.

In addition to the many valuable additions to the text everywhere throughout the work, the illustrations are particularly striking, clear, and forcible, and add much to the practical value of the book as a working dissector, in which capacity it has been so much employed. The editor has added no less than thirty-four original cuts, besides the large number selected from other recent works for this edition.

The new edition deserves, and no doubt will receive, even more liberal support than the past editions of this popular book have ever enjoyed. There is, however, one change which should be made to bring this work up to date—to have the parts on the illustration lettered and not numbered. This would be an expensive luxury to the publishers, but one which modern ideas demand.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK FOR THE YEAR 1893. Published by the Society. Philadelphia: William J. Dornan. 1893.

AMONG many interesting papers, our attention has been specially attracted by those of Elsner, Einhorn, and Stockton upon "Diagnosis and Treatment of Disorders of the Digestive Tract." Bulkley's report upon "Chancres of the Tonsil" is an important contribution to a subject of perennial interest. "Carcinoma" is another topic that has received careful discussion; and we heartily commend the course taken by the Society to secure adequate presentation of vital topics. Dr. Pilcher's "Presidential Address" and its probable consequences, we have previously discussed.

CORRESPONDENCE.

IMMUNITY TO APPENDICITIS.

To the Editor of THE MEDICAL NEWS,

SIR: In your issue of September 2d you quote one of America's foremost surgeons who cannot call to mind or learn of any of his Southern *confrères* who has seen appendicitis in the black man. This statement recalls two other immunities of the black race to which I referred in a letter published in the *Medical Record*, August 27, 1892: the immunity to scarlet fever and that to locomotor ataxia. These three immunities (assuming that the immunity to appendicitis is real) are common to the negroes, as to the Japanese. My own experience has been chiefly with the Japanese. One might be inclined to attribute the existence of these immunities in the Japanese to a fusion of negro blood some 1300

years ago. That such a negroid fusion took place is recognized by all ethnologists. The Eta, the distinctly leprous element, is decidedly a negroid race, of which we are forcibly reminded by some of their features—for instance, their curly hair, their pigmented sclerotic, etc. Baelz even thinks that the outcast Etas are descended from the ancient leper colonies. The isolation of this element, in consequence of its being a prey to leprosy, kept the negro characteristics from vanishing. That leprosy was rampant in that race is but natural, as leprosy is an African disease.

The occurrence of locomotor ataxia has been attributed to syphilis. Gowers has found 90 per cent. of his cases of ataxia to have originated in syphilis. Starting from this proposition, we should conclude that there is no syphilis in Japan, as there is no locomotor ataxia. But quite the reverse is true: the fact is that the race has been rotten with syphilis in the course of thirteen centuries; though the disease, being modified, is now less virulent. As we are not able to connect the immunity to ataxia with syphilis, it is natural, I think, to connect it with the negro characteristics inherited by the Japanese race.

However, I have been in the habit of taking quite a different view from the ethnologic one of the immunity to appendicitis. It seems to me that the diet has very much to do with it; temperance in eating, aseptic hot water (Japanese tea is drunk continually), vegetable diet (Japanese eat rice in enormous quantities, as all the world knows), absence of meat-diet (almost absolute in Japan), with its ptomaines and leukomaines, may be, after all, the cause, though indirectly, of the absence of appendicitis in Japan. A vegetable diet necessitates a large extent of intestine, and this extraordinary intestinal length belongs to the Japanese. The following passage from one of Dr. Scheube's articles will, I think, be interesting in this connection: "In my 'Remarks on Japanese Diet' I said that very probably the rice is better used up in the intestine of the Japanese than in that of the European, and I expressed a surmise that the Japanese intestine must be the longer of the two. I had before me, at that time, one single measurement, that of the intestine of an adult Japanese. The total length of the intestine amounted, in this sample, to 995.5, of which 183 belonged to the large intestine. The length of the body itself was 156.5.

"Mr. Taguchi, professor of anatomy in the Japanese Section of the Medico-Surgical Academy, in Tokio, has since kindly communicated to me the results of his measurements, both of body and intestine, on the corpses of 26 persons between seventeen and sixty years old. He made use of the Japanese measures, which I have converted into metric figures (1 shaku = 0.303 m.).

"These 26 cases give a length of intestine of 953.7 cm. The maximum was 1203, the minimum 0.667; only three times was the intestine less than 800 cm. in length. Hoffman, in his *Manual of the Anatomy of Man*, states the length of the intestine as from 8 to 9 m. Accordingly, even the absolute length of the intestine is greater in the Japanese than in the European.

"The differences are still more striking if we take into account the size of the body, and if we reduce the intestinal length to 100 cm. of the body-length. Hoffman, from whom I have quoted the foregoing figures as

to the length of the intestine, found in men an average size of the body of 167.8 cm. Thus, $8\frac{1}{4}$ m. being admitted to be the average length of the intestine, there are 506.5 to 100 cm. of bodily length. The average length of the body amounted in our 26 Japanese to 156.9,¹ so that to a body-length of 100 cm. corresponds an intestinal length of 607.8 cm. The intestine of the Japanese is one-fifth longer than that of the European. Whether further measurements will confirm these conclusions or not remains to be seen."

I must add here a few words explanatory of the manner in which, to my mind, the effect of the vegetable diet is produced. The vegetable or graniferous diet is gaseous. The gases, inflating the intestine, prevent the impaction of the appendix vermiformis.

But, however it may be explained, the fact remains that those people among us whose fare is the plainest and least concentrated (which is the nearest approach to pure vegetarian diet) are as exempt from appendicitis as any Japanese could be. The disease chooses for its victims only the highly fed, the great meat-eaters, wine-bibbers, and those that keep their blood in that plastic and consequently inflammable state which a meat-diet naturally produces.

Therefore, let anyone who has suffered from a first onslaught of appendicitis betake himself to a diet of hot water (omitting the spirit) and vegetables, and taboo the meat.

Yours truly,

ALBERT S. ASHMEAD, M.D.

NEW YORK.

APPENDICITIS IN THE NEGRO.

To the Editor of THE MEDICAL NEWS,

SIR: In your issue of September 2d the question of appendicitis in the negro is presented, with a proposition to record the results of experience in this connection.

It so turns out that a number of cases have been under my care, either directly or in consultation, in which there were well-defined signs of inflammatory action in the right flank of the negro. These cases were in most instances classified as typhilitis; but, with the light we have on the inflammatory troubles in this region, it is very probable that some of them originated in the appendix vermiformis. As they were not subjected to any operation and fortunately recovered without affording an opportunity for a post-mortem examination, there must remain a doubt as to the diagnosis.

There is, however, one case in the person of a negro, in regard to which all doubt was removed by an operation showing the existence of appendicitis. This was a patient of Dr. T. D. Longino, who saw the man first on April 23, 1891. Dr. Longino writes me that the patient complained of his bowels being cramped after drinking a quantity of ice-water. He was given a dose of morphin, which afforded little relief, and in about two hours the physician was called again, finding the man still in pain. The morphin was repeated, and more was left, to be taken during the night. Upon calling again before day, it was found that the patient had suffered all night, and morphin was given hypodermatically. The bowels being distended,

¹ The same figure is also given by A. Weissbach as representing the average size of the Japanese. I found by a large number of measurements a somewhat higher one—158.3 cm.

hot stupes of spirit of turpentine over the abdomen seemed to afford temporary relief during the 24th. Upon seeing the man again on the 25th there was still pain and the temperature had gone up considerably in the meantime. I was called by Dr. Longino on the morning of the 26th and concurred in his opinion that the patient was suffering from appendicitis, requiring operative interference without delay. Dr. W. A. Crewe was invited to examine the patient and fully acquiesced in the propriety of attempting to save life by an operation, though the man was then in a very prostrate condition and the abdomen enormously distended, indicating general peritonitis. In the presence of Dr. Butterfield, of Binghamton, N. Y., who was on a visit to Dr. Longino at the time, and, with the assistance of the colleagues named, I performed the usual operation and found the appendix vermiformis much inflamed and perforated by a fecal concretion. It was ligated near the attachment to the caput coli and excised. After washing out the cavity, I was proceeding to close the wound, when the patient ceased to breathe and died.

A case has been reported to me by a colleague, in the person of a negro woman, who was undergoing an operation for a different disease, in whom it was noted that the appendix was inflamed and contained what was supposed to be fecal concretions. But not thinking it proper to complicate the case by adding to the traumatism by the removal of the appendix, this was returned without interference, and the woman made a good recovery, illustrating that all troubles of the appendix do not require its removal. This observation, however, shows not only the existence of appendicitis in the negro, but also its occurrence in the female.

According to the records accessible to me, there are comparatively few instances of appendicitis among women, and it has not come within my experience to treat a single case in the female.

This observation may lead others to collect statistics bearing upon this point.

Respectfully,

J. MCFADDEN GASTON, M.D.

ATLANTA, GA.

APPENDICITIS IN THE NEGRO.

To the Editor of THE MEDICAL NEWS,

SIR: Is the negro subject to appendicitis? Yes. On June 21, 1893, I saw a full-blooded negro, about fifty years old, with undoubted symptoms of appendicitis. I operated on the 28th, and found the appendix perforated and gangrenous. The man died of septicemia about six days after the operation. I have seen only two other cases, both in white persons, however, and in both recovery took place after simply opening an abscess. A fistula remained for six months in one, but closed very soon in the other.

Respectfully,

R. M. HAND, M.D.

SHUBUTA, MISS.

APPENDICITIS IN THE NEGRO.

To the Editor of THE MEDICAL NEWS,

SIR: In response to your request, as expressed in your issue of the 2d inst., I will state that I have had two cases of appendicitis in the negro. Both were seen in consultation, and both occurred a number of years ago

before we had heard much of operative interference. Both resulted fatally, and in both a post-mortem was secured, verifying the diagnosis. One was in a full-blooded negro, the other in a half-blooded one; the former was aged about thirty, the latter about forty.

I have had an unusually rich experience with appendicitis, and, considering the size of our colored population, if the foregoing cases are all that I have had (and they are all that I can now recall), I should regard the assumption justifiable that the negro is not as subject to this disease as the white man.

Very respectfully,

J. F. BALDWIN, M.D.

COLUMBUS, OHIO.

NEWS ITEMS.

The British Medical Association is to hold its next annual meeting at Bristol, under the presidency of Dr. Long Fox.

Dr. Herbert R. Spencer has been appointed Professor of Midwifery and Obstetric Medicine in University College, and Obstetric Physician to the University College Hospital, London, in succession to Dr. John Williams, who has resigned.

Graily Hewitt, for many years Professor of Obstetrics in University College and Obstetric Physician to University College Hospital, London, died recently at the age of sixty-five years. At the time of his death he was Emeritus Professor in the College and Consulting Physician to the Hospital.

The Army Medical School.—By direction of the Secretary of War, upon the recommendation of the Surgeon-General of the Army, the Faculty of the Army Medical School recently established will be made up of Colonel Charles H. Alden, Assistant Surgeon-General, U. S. A., President of the Faculty, and Lecturer on the Duties of Medical Officers; Lieutenant-Colonel William H. Forwood, Deputy Surgeon-General, U. S. A., Professor of Military Surgery; Major John S. Billings, Surgeon, U. S. A., Professor of Military Hygiene; Major Charles Smart, Surgeon, U. S. A., Professor of Military Medicine and Director of the Chemical Laboratory; Captain Walter Reed, Assistant Surgeon, U. S. A., Professor of Clinical and Sanitary Microscopy and Director of the Pathological Laboratory; and Captain Julian M. Cabell, Assistant Surgeon, U. S. A., Assistant to the Professor of Military Surgery and Instructor in Hospital Corps Drill.

The course of instruction will cover a period of four months, and will be given annually at the Army Medical Museum, in Washington City, commencing on the first day of November. It will include lectures on and practical instruction in: 1. The duties of medical officers in war and peace. 2. Military surgery, the care of the wounded in time of war, and hospital administration. 3. Military hygiene. 4. Military medicine. 5. Microscopy, sanitary and clinical; pathologic histology, bacteriology and urinalogy. 6. Hospital Corps drill, and first aid to wounded.

By permission of the Surgeon-General, medical officers of the Army who desire to avail themselves of the course of instruction, and who are stationed in or near the city of Washington or who have a leave of absence which

enables them to attend the course, may be admitted as pupils under the same regulations as apply to recently "approved candidates for admission to the Medical Corps of the Army."

At the termination of the course of instruction the "approved candidates for admission to the Medical Corps of the Army" will be examined by the several professors, and their relative proficiency in each branch will be reported by the president of the faculty to the Secretary of War through the Surgeon-General of the Army.

REGULATIONS.—1. The president of the faculty will be responsible for the discipline of the school.

2. The junior professor will act as secretary and will be responsible for all property pertaining to the school.

3. A faculty meeting will be held in the office of the Secretary on the first Monday of each month from October to March, inclusive, and whenever called by the president of the faculty or the Surgeon-General of the Army.

4. Resolutions adopted by the faculty relating to the course of instruction, the purchase of books and instruments, etc., will be submitted to the Surgeon-General of the Army for his approval.

5. The president of the faculty will submit to the Surgeon-General of the Army, on or before the first day of April of each year, a detailed report of the condition of the Army Medical School, including an account of the instruction given, and the proficiency of the several pupils, as shown by an examination made by each professor at the termination of his course.

6. The hours of instruction will be from 9 to 12 A.M., and from 1 to 4 P.M., daily, from November 1st to February 28th, inclusive, with the exception of Saturdays, Sundays, legal holidays, and the week commencing December 25th.

7. Pupils will be required to be present during the hours designated, unless specially excused by the president of the faculty or by orders from the War Department.

8. When necessarily absent on account of sickness or other emergency, pupils will, as soon as practicable, send a written statement to the secretary of the faculty, explaining the reason for such absence.

9. The laboratories and library of the Army Medical School will be open for the use of pupils during the hours of instruction designated.

10. Pupils will be held strictly accountable for all instruments and apparatus issued to them for their personal use during the course of instruction, and for any loss or injury to books or apparatus belonging to the Army Medical School, when such loss or injury is due to carelessness or neglect.

11. Pupils in the Army Medical School, during the hours of instruction, will wear the undress uniform of the grade to which they belong, except when engaged in laboratory work, when a black cambric laboratory gown may be worn.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Laws and Regulations for the Maritime Quarantines of the United States. Washington: Government Printing Office, 1893.

Thirty-second Annual Report of the Cincinnati Hospital to the

Mayor of Cincinnati, for the Fiscal Year ending December 31, 1892. Frank W. Hendley, M.D., Supt. Cincinnati: The Commercial Gazette Job Print, 1893.

Fonctionnement de la Maison d'Accouchements Baudelocque. Clinique de la Faculté, dirigée par le Professeur Adolphe Pinard, 1892. Dr. G. Lepage. Paris: G. Steinheil, Éditeur, 1893.

Something More on the Pathology and Treatment of Hemorrhoids, Fissures, Fistulas, and Ulcers in the Ano-rectal Region, with a few Notes on Prolapsus Ani and Neoplasm. By Thomas H. Manley, M.D. Reprinted from the Medical Brief, 1892.

The Value of Javal's Ophthalmometer for the Correction of Astigmatism where Marked Amblyopia is Present. By A. Britton Deynard, M.D. Reprinted from the Post-graduate, 1892.

Index-Catalogue of the Library of the Surgeon-General's Office United States Army. Vol. XIII. Washington: Government Printing Office, 1892.

Moullin's Treatise on Surgery. Second American edition. Revised and edited by John B. Hamilton, M.D., LL.D. Philadelphia: P. Blakiston, Son & Co., 1893.

The Radical Cure of Aural Polypi. By S. Macuen Smith, M.D. Reprinted from Annals of Ophthalmology and Otology, vol. ii, No. 2, 1893.

Points of Similarity Between Us and Homeopathic Physicians. By John B. Roberts, A.M., M.D. Reprinted from the Transactions of the Philadelphia County Medical Society, 1893.

On Early Laparotomy in Appendicitis, with Report of Cases. By John E. Walsh, M.D. Reprinted from the Denver Medical Times, 1893.

Double Congenital Dislocation of the Lens. By Geo. Friebs, M.D. Reprinted from the Transactions of the Ophthalmological Section of the American Medical Association, 1892.

Lithemia. By P. Max Foshay, M.S., M.D. Reprinted from the Cleveland Medical Gazette, 1893.

Rules of the Philadelphia Dispensary for the Medical Relief of the Poor, Instituted April 12, 1786, with the Annual Report for 1892, and a List of Contributors, Managers, and Officers for 1893. Philadelphia: Franklin Printing Co., 1893.

A Plan to Procure Cows' Milk Designed for Clinical Purposes. By Henry L. Coit, M.D. Pamphlet. Newark: L. J. Hardham, Printer and Binder, 1893.

A Board of Medical Examiners: The State's Medical Duty. By Luther B. Grandy, M.D. Reprinted from the Atlanta Medical and Surgical Journal, 1893.

Transactions of the John Guitéras Medical Society of Undergraduates, University of Pennsylvania, 1891-92. Philadelphia: University of Pennsylvania Press, 1893.

New York State Reformatory at Elmira; Seventeenth Year-book, Containing the Annual Report of the Board of Managers for the Year ending September 30, 1892. Transmitted to the Legislature, January, 1893.

A Handbook of Local Therapeutics. General Surgery, by Richard H. Harte, M.D. Diseases of the Skin, by Arthur Van Harlingen, M.D. Diseases of the Ear and Air passages, by Harrison Allen, M.D. Diseases of the Eye by George C. Harlan, M.D. Edited by Harrison Allen, M.D. Philadelphia: P. Blakiston, Son & Co., 1893.

Bulletin of the Psychological Section of the Medico-Legal Society. Published quarterly by Clark Bell, Esq. New York, March, 1893.

The Ear of Man and the Organ of Corti. By J. A. Maloney, M.D. Reprinted from the Annals of Ophthalmology and Otology, 1893.

The Surgery and Surgical Anatomy of the Ear. By Albert H. Tuttle, M.D. Physician's Leisure Library. Detroit: George S. Davis, 1892.

Idiopathic Muscular Atrophy. By J. T. Eskridge, M.D. Reprinted from the Journal of Nervous and Mental Disease, 1893.

Chronic Meningo-myelitis. By J. T. Eskridge, M.D. Reprinted from the Denver Medical Times, 1893.

Lessons in Physical Diagnosis. By Alfred L. Loomis, M.D. LL.D. Tenth edition. New York: Wm. Wood & Co., 1893.

A Successful Method of Treating Follicular Tonsillitis. By Junius C. Hoag, M.D. Chicago, 1893.